

*A Comparative Study of Apical Microleakage by
using different Preparation and Obturation
Techniques
(An in vitro study)*

*A Thesis Submitted To The Council of The College of Dentistry at
The University of Baghdad, in Partial Fulfillment of The
Requirements for The Degree of Master of Science in
Conservative Dentistry*

By

Mervat Maamon Al-Bakri

B.D.S

Supervised by

Prof. Dr. Adel F. Ibraheem

B.D.S., M.Sc.

Abstract

This study is to compare the apical sealing ability of root canals prepared with Hand ProTaper and Rotary ProTaper that obturated with Thermafil, ProTaper gutta percha points and conventional Cold Lateral condensation, in single straight canals (premolars) using apical leakage study. 60 extracted human premolars were selected. The teeth were then randomly divided into two groups of 30 specimens each. The ProTaper system used to prepare the canal. Group A (Rotary ProTaper) and Group B (Hand ProTaper), each group were then subdivided into subgroups A1, B1 were filled with Thermafil, A2, B2 were filled with ProTaper gutta percha, A3, B3 were filled with Lateral condensation technique. Thermafil root canal sealer was used as the common sealant. Samples were stored in normal saline at 37°C for 24 hours for complete. The samples were immersed in 2% Methylene blue dye for one week then they were longitudinally sectioned. The data collected were analyzed by analyses of variance ANOVA and t-test to identify the presence of significant differences between groups. Under the circumstances of this study, results showed that Hand ProTaper was significantly better than Rotary ProTaper at apical microleakage when Thermafil, ProTaper gutta percha points and Lateral condensation techniques were used. Cold Lateral condensation leaked the most in comparison with other test groups, which was followed by ProTaper gutta percha points with moderate leakage and Thermafil with least microleakage, so Thermafil obturation technique give the best apical seal.