

***The effect of dowel space preparation on the apical
seal of Resilon & Gutta-percha Obturation
materials.***

(An in vitro comparative study)

A proposal for Master Degree Thesis

By

Saleh Mwaffaq Fadhel

Supervised by

Professor Dr. Karim Al-Azzawi

2006

Abstract

This in vitro study was conducted to compare the effect of immediate versus delayed dowel space preparation using rotary instruments (peeso reamers) on the apical seal of roots filled by gutta-percha with two types of resin based-sealers (AH26 and AH Plus) and by Epiphany obturation system.

Sixty freshly extracted human teeth with single and straight canals were used in this study. These teeth were cleaned and their crowns were removed at the cemento-enamel junction, the roots were instrumented using the step-back technique, instrumentation was accomplished by using the Gates-Glidden drills with copious irrigation of 2.5% sodium hypochlorite and 17% solution of aqueous EDTA was used as the final rinse to remove smear layer.

The roots were randomly divided into 3 main groups according to the type of obturation materials using lateral condensation technique (20 teeth for each group):

Group A: Gutta-percha + AH26 root canal sealer.

Group B: Gutta-percha + AH Plus sealer.

Group C: Resilon+ Epiphany sealer+ prime. (Epiphany obturation system)

Then each group divided into two subgroups (10 teeth for each subgroup) according to the time of dowel space preparation either immediately after obturation or after one week storage in 100% humidity condition at 37°C in an incubator using peeso reamers to a depth that left 5mm of the filling material apically.

The external surfaces of all roots were coated by two layers of sticky wax except for the apical 2 mm and were then submerged in 2% methylene blue dye for 3 days at 37°C. After that, all roots were longitudinally sectioned for linear measurement of dye penetration through the apical foramen using a stereomicroscope.

The results showed significantly less apical leakage in roots filled by gutta-percha with AH Plus than those filled by gutta-percha with AH26 and those filled by Epiphany obturation system for delayed dowel space preparation and there was a significantly less apical leakage in roots filled by Epiphany obturation system that prepared immediately after obturation than those received delayed preparation.