

An evaluation of apical microleakage in roots filled with thermoplastic synthetic polymer based root canal filling material (Real Seal 1 bonded obturation)

A thesis submitted to the council of the College of Dentistry at the University of Baghdad, in partial Fulfillment of the requirement for the degree of Master Science in Conservative Dentistry.

By

Nadine Jamal Abdul-Rada

B.D.S

Supervised by:

Prof. Dr. Adel F. Ibraheem

B.D.S, M.SC

April-2011

Jumada Al-Awal 1432

Abstract

This in vitro study was conducted to evaluate and compare the apical microleakage of root canals filled with cold lateral condensation of gutta-percha, cold lateral condensation of Resilon, Thermafil and Real Seal 1 bonded obturation. Sixty freshly extracted maxillary first molars with straight palatal roots were selected. All teeth had mature apices, selected carefully according to specific criteria. Using a diamond disc bur with straight hand piece and water coolant the palatal roots of teeth were sectioned perpendicular to the long axis of the root at the furcation area which was marked by marking pen. All roots were prepared with crown-down technique using hand protaper system (Sx-F4).

The prepared roots randomly divided into 4 groups of fifteen roots each; the groups were obturated by different obturation techniques. In Group 1 roots obturated with (lateral condensation of gutta-percha), Group 2 was obturated with (lateral condensation of Resilon), Group 3 was obturated with (Thermafil) while in group4 was obturated with (RealSeal 1 bonded obturation).

All the samples were sealed coronally and stored in normal saline at 37°C for one week then all the roots submerged in Indian ink for one week. The roots were cleared and the degree of linear dye penetration was measured in millimeter by stereomicroscope under 40X magnification with calibrated scale ocular grid.

The data collected were analyzed by analysis of variance ANOVA and t-test to identify the presence of significant differences between groups. The results showed that The RealSeal 1 bonded obturation leaked apically significantly higher than other test groups, while the group of lateral condensation of gutta-percha exhibited the least value of apical microleakage.