

A study to Compare the effect of different irrigant solutions on the sealing ability of obturated root canals Bacterial Penetration Study

A thesis
Submitted to council of the College of Dentistry
University of Baghdad
In Partial Fulfillment of the Requirement for the Degree of Master of
Science in Conservative Dentistry

By
Qabas Faruq Fauzi
B.D.S

Supervised by
prof. Dr. Waleed Al-Hashimi

January 2010

Muharram 1431H

Abstract

The goal of this in- vitro study was to determine the effect of different types of irrigants and chelating agents on the sealing ability of root canal filling as demonstrated by the amount of bacterial penetration through the apical foramen.

The microorganism which is used in this study was *Enterococcus faecalis*.

Forty freshly extracted, fully formed, single rooted teeth were collected, and debrided. The crown of each tooth was sectioned near the CEJ in order to standardize the root length to approximately 15 mm .All root canals were prepared by ultrasonic technique ,different types of irrigants were used during root canal preparation 1-Normal Saline (control group) , 2-Citric acid ,3- NaOCL , and 4-EDTA .The teeth were assigned to four groups of 10 teeth each according to the type of irrigant used .All groups were obturated using lateral condensation technique, with gutta percha, and AH plus sealer.

The model system consisted of an upper chamber attached to the cement enamel junction and a lower chamber at the apices of the teeth. Standardized bacterial suspension containing *Enterococcus faecalis* isolate was inoculated into the upper chamber while the lower chamber was a test tube filled with 13 ml of sterile Hanks balanced salt solution (HBSS) to maintain bacterial viability.

Models were incubated at 37° C ,and at various times over a 14days period, and samples were taken from the lower chamber and spiral-plated on Blood agar to culture and count bacterial colonies forming unit.

According to this study there was a significant difference between EDTA group and other types of irrigants .This means that EDTA 17% is an effective root canal irrigant ,improve sealing of root canal filling ,and reduce baterial leakage .This is followed by 2.5% NaOCL and 4% Citric acid were they show a significant difference from normal saline group .