"A COMPARATIVE EVALUATION OF EFFECT OF 2% CHLORHEXIDINE AND 5.25% SODIUM HYPOCHLORITE ON SURFACE TEXTURE OF GUTTA-PERCHA AND RESILON CONES USING ATOMIC FORCE MICROSCOPE -AN INVITRO STUDY".

by

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Dissertation Submitted to the
Rajiv Gandhi University of Health Sciences, Karnataka, Bangalore

In partial fulfillment
of the requirements for the degree of

MASTER OF DENTAL SURGERY (M.D.S.)

in

CONSERVATIVE DENTISTRY & ENDODONTICS

Under the guidance of

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April 2012

ABSTRACT

Background & objectives: Re-infection of the root canal system is the crucial factor that influences the outcome of treatment. Preventive procedures include rapid decontamination of the root canal filling material like Guttapercha cones with chemical disinfectants. The chemical disinfectant should be effective with a broad spectrum of action, but it should also be safer chemical with minimal deteriorative effect on the root canal filling material.

This study was undertaken to compare the effect of 2% Chlorhexidine and 5.25% Sodium Hypochlorite on Guttapercha and Resilon cone structure using Atomic force microscopy.

Material and methods: Eleven Guttapercha and Resilon cones each were cut 3 mm from their tip, attached to glass slide cyanoacrylate glue and immersed in 5.25% Sodium Hypochlorite and Chlorhexidine for 1, 5, 10, 20, and 30 min. Untreated Guttapercha and Resilon cones were used as control. After immersion the samples were thoroughly rinsed with 5ml of distilled water and the cone was dried with filter paper. The analysis of the surface topography was performed on the region between 1 and 2mm from the tip using the atomic force microscope. Root mean Square (RMS) parameters for contact mode imaging were measured. The differences between RMS values were tested by Kruskal Wallis ANOVA, Mann-Whitney U test and Wilcoxon matched pairs test.

Results: There was no deterioration in the surface topography of Guttapercha and Resilon when treated with 2% Chlorhexidine in comparasion to baseline ($P<0.05$).

Resilon exhibited no deterioration in topography when immersed in 5.25% Sodium Hypochlorite. There was a significant decrease in the mean RMS values of Guttapercha treated with Sodium Hypochlorite from the baseline (89.40±3.65) to 79.92±3.13, 72.46±5.08, 57.86±4.96, 42.42±3.00 and 33.26±2.75 at time intervals of 1min, 5min, 10min, 20min and 30min.

Conclusion: There was severe alteration in the surface topography of Guttapercha when treated with 5.25% Sodium Hypochlorite. Both Guttapercha and Resilon cone didn't exhibit any alteration in the surface topography when treated with 2% Chlorhexidine. Resilon didn't exhibit any alteration in the surface topography when treated with 5.25% Sodium Hypochlorite.

Keywords: Guttapercha; Resilon; Chlorhexidine; Sodium hypochlorite and atomic force microscope.