

Bacteriologic in vitro coronal leakage study of before and after post space preparation

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I. Objectives

The purpose was to compare the speed of coronal leakage before and after post space preparation using *Streptococcus Mutans*.

II. Materials and Methods

Thirty straight, intact, single-rooted extracted human teeth were selected randomly. The crowns were removed to a uniform remaining root length 14mm using diamond high speed burs with air-spray coolant. Canals were enlarged by 06 taper Profiles[®] to a size #40 as a master apical file. EDTA containing lubricant(RC Prep[®]) was applied and 2.5% sodium hypochlorite was used as an irrigant. After autoclaving, canals were dried with paper point and filled with gutta percha point and Tubuliseal[®] sealer, using continuous wave technique. Groupings are as follows.

Group1-positive control-5 teeth. These teeth were obturated without sealer.

Group2-negative control-5 teeth. These teeth were obturated and covered the surface of the root completely with sticky wax.

Group3-experimental A-10 teeth. These teeth were obturated.

Group4-experimental B-10 teeth. These teeth were obturated and prepared for post space remaining 5mm of gutta percha.

Tapered 1.5ml vials were attached so that the crown of the tooth was enclosed and the root protruded though the end. The vials were adapted and sealed at the cemento-enamel junction with sticky wax and cyanoacrylate glue and covered with sticky wax, leaving 1mm of the apex uncovered except negative control group. The teeth were suspended in plastic tubes. The models were sterilized in EO gas. This upper chamber received the bacterial suspension everyday to simulate a coronal leakage situation. The lower chamber consisted of BHI added Andrade's indicator. The samples were monitored daily until yellow indicator solution at the bottom of the plastic tube turned red. The date when the BHI turned red was recorded in each sample. The samples did not leak were monitored for 70 days.

Student's t test was used to determine the statistical difference between the experimental groups.

III. Results

All roots in the positive control group turned red within 24 h and those of negative control group remained yellow throughout the experimental period(70 days). The samples of group3 were contaminated within an average of 27.2 days, ranging from 14 to 39 days. The samples of group4 were contaminated within an average of 15.7 days, ranging from 9 to 22 days.

There was significant difference between group3 and group4 statistically. ($p < 0.05$)

IV. Conclusions

The result of this study showed that the 5mm of gutta percha fillings provided a seal inferior to that of intact root canal fillings which was 14mm. According to the data of this study, it is not good to prepare post space after obturation immediately unless post & core build up is performed at the same visit.