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# INTRATUBULAR BIOMINERALIZATION OF DENTIN USING BIOACTIVE MATERIALS: AN INVITRO STUDY.

By

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## ABSTRACT

### BACKGROUND AND OBJECTIVES:

The application of Bioceramic sealer during the root canal obturation is gaining concern due to its bioactive characteristic to form an apatite in dentinal tubules. In this regard, this study was done to investigate and compare the ability of the different bioactive sealers(Total Fill BC sealer, Endoseal MTA and Sealapex) in the biomineralization of dentin.

### MATERIAL AND METHODS:

Sixty curved roots (mesiobuccal, distobuccal) from human maxillary molars were used. Out of sixty teeth ,thirty teeth were pretreated with Phosphate buffered solution. 10 teeth were assigned to three groups of sealers GROUP A(ENDOSEAL MTA), GROUP B(SEALAPEX) and GROUP C(TOTAL FILL BC SEALER). The root canals were instrumented by using the rotary files with continuous sodium hypochlorite (2.6%) irrigation. Final irrigation was done with 5% EDTA and sodium hypochlorite. The canals were obturated with gutta percha using, Endoseal MTA , Sealapex and Total Fill BC sealer in combination with the cold lateral compaction. After setting, the roots were sectioned horizontally at 5mm from the apex. Assessment of biomineralization was performed by using scanning electron microscopy. Statistical analysis was performed by One-way ANOVA and Tukey's Post-hoc analysis($p<0.001$).

### RESULTS:

Total fill BC sealer penetrated significantly deeper into dentinal tubules when compared to Endoseal MTA and Sealapex

Even the biomineralization capacity was highest for Total Fill BC sealer. As for the pretreatment with the Phosphate buffered solution it obtained a favorable results with all the three sealers.

**CONCLUSION:**

Within the limitation of this study, bioceramic sealer and calcium hydroxide based sealers were used for root canal obturation that resulted in harmonious intratubular depth penetration and dentinal tubule biomineralization.