

## **ABSTRACT**

### **AIM:**

To evaluate the marginal adaptation of MTA, MM-MTA and Endocem MTA as root end filling materials in mandibular second molars with C-Shaped Canals.

### **OBJECTIVES:**

1. To compare the marginal adaptation of MTA, MM-MTA and Endocem MTA in C-shaped canals of mandibular second molars qualitatively and quantitatively.
2. To compare the marginal adaptation of MTA, MM-MTA and Endocem MTA in C-shaped canals of mandibular second molars with marginal adaptation of MTA in mesiobuccal canals of mandibular second molars qualitatively and quantitatively.

### **METHODOLOGY:**

Sixteen human mandibular second molars based on the inclusion and exclusion criteria were selected. Tissue debris were cleaned mechanically and ultrasonically. They were stored in 10% formalin until use. The teeth were decoronated at cemento-enamel junction, and root canals were prepared using stainless steel K- files (Dentsply, India). For irrigation, 3% sodium hypochlorite and 17% EDTA were used. Saline is the final irrigant in all the samples. The root canals were obturated by the cold lateral compaction technique with 2% Gutta percha and BioRoot RCS as sealer. The apical 3mm was resected after that all the root canals were retro prepared to a depth of 3mm using ultrasonic retrograde tip. The teeth were divided into four groups [3 experimental groups and 1 control

group] (n=4): Group I- MTA in C-shaped canals of mandibular second molars; Group II- MM-MTA in C-shaped canals of mandibular second molars; Group III- Endocem MTA in C-shaped canals of mandibular second molars and Group IV- MTA in mesiobuccal canals of mandibular second molars. The teeth were sectioned longitudinally. Apically retrofilled 3mm of specimens were sectioned at each millimeter using a slow speed diamond disc resulting in 3 samples for every tooth (n=48). Each sample was examined under Scanning Electron Microscopy for marginal adaptation. The SEM images were evaluated qualitatively using scores given by Selen Kuçukkaya Eren et al (2017) and quantitatively by ImageJ software.

#### **RESULTS:**

Gaps were present in both the test group and control group but it has no statistical significance. Hence, MTA, MM-MTA and Endocem MTA adapts well in C-shaped canals both qualitatively and quantitatively. The marginal adaptation of MTA, MM-MTA and Endocem MTA in C-shaped canals of mandibular second molars (Experimental groups) adapts similarly as that of MTA in mesiobuccal canals (Control group) qualitatively with no statistical significance.

#### **CONCLUSION:**

The present study concludes that marginal adaptation of widely advocated MTA was comparable with that of newly introduced MM-MTA and Endocem MTA. Hence, MM-MTA and Endocem MTA can be a promising alternative to MTA in clinical situations

**Key words: C-Shaped canals, Marginal adaptation, MTA, MM-MTA,**

**Endocem MTA.**