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DENTINAL SEALING ABILITY OF THREE BIOCERAMIC SEALERS AND MTA IN THE ROOT CANAL

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Introduction. In many cases of pulpal disease associated with periodontal bone loss (periodontal deep pocket) the endodontic treatment should be completed first. Residual periodontal issues can be treated after completion of successful endodontic treatment, and in many cases, successful regeneration of periodontal defects is possible in endodontically treated teeth. the most desirable outcome of any root canal treatment in case of endoperiodontal disease is perfect obturation by proper sealer. Microleakage is still a main reason for failure of root canal treatment where the challenge has been to achieve an adequate seal between the structure of the tooth and the main obturating material. To prevent this, it is required to provide seal both apically and laterally in the root canal system with proper filling materials such as Gutta-percha, sealer or MTA, which have adequate biocompatibility and antimicrobial properties.

Aim: the study aimed at comparing the sealing ability of two calcium silicate based sealer (sure-seal root, bio-c Angelus), MTA-based sealer (Prime MTA) and Mineral trioxide aggregate (eMTA) by using stereomicroscopic and analysis of dye penetration.

Materials and methods. Forty single rooted teeth were used in this in-vitro study and divided into following groups. **Group I**: Angelus Bio-C Sealer Bioceramic Root Canal Sealer ;**Group II**: Sure-Seal Bioceramic Root Canal Sealer **Group III**: Prime MTA Bioceramic Root Canal Sealer **Group IV**: eMTA . Teeth were decoronated and instrumented with Ni-Ti rotary files and maual files ,also obturated with specified materials, Single cone Gutta-percha and Lateral condensation. for microleakage measuring used dye penetration and the level of horizontal dye penetration was 3 mm from apex by methylen blue. Next the specimens were transversely sectioned at each mm till 3 mm from the apex. All the specimens were examined under stereomicroscope for microleakage and the obtained data were statistically analyzed using One-way ANOVA and Bonferroni Post-hoc-Tests.

Results and their discussion. The ANOVA showed that there was a significant difference among the groups. A Bonferroni Post hoc test was used to compare the groups in pairs to find out which was significantly different.The Bonferroni Post hoc test showed that there wasn’t any significant difference between groups except the pairwise group comparison of Group 3 (Prime MTA bioceramic sealer) - Group 4 (eMTA) with an p-value of less than 0.05.

Conclusion. According to the results mostly all the bioceramic sealers possess a perfect combination of sealing ability and biocompatibility. However, in this study eMTA and Prime MTA bioceramic sealer have respectively the highest and least sealing ability, there aren’t any significant differences with adhesion capabilities among the premixed groups of bioceramic sealers.