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EVALUATION OF THE EFFECT OF DIFFERENT INTRAORIFICE BARRIER MATERIALS ON CORONAL MICRO LEAKAGE OF ENDODONTIC ALLY TREATED TEETH BY USING MICRO-COMPUTED TOMOGRAPHY TECHNOLOGY (A COMPARATIVE IN VITRO STUDY)

Abstract:

Background: Endodontic failure can result from insufficient coronal seal, which induces post-endodontic infections. Therefore, the intra-orifice barrier is a reliable substitute technique to reduce coronal leakage in teeth where endodontic therapy has been performed.

Aim: To evaluate the effect of three different restorative materials (Ever X Flow, Centeno forte, and Bio-C sealer ION) as intraorifice barriers (IB) of endodontic ally-treated teeth on Coronal microleakage represented by Internal adaptation of barrier materials to radicular dentin and Porosity of materials.

Materials and Method: Forty-sound removed human mandibular premolars were chosen, and decorated to a standardized root length (15 ± 0.5mm), a digital caliper was used to measure the mesiodistal and buccolingual diameters of the coronal plane of root to roughly similar buccolingual (BL) and mesiodistal (MD) dimensions (7.5 ± 0.5mm and 4.5 ± 0.5 mm respectively) and the coronal plane of the root canal be approximately similar in buccolingual (BL) and mesiodistal (MD) dimension (3.2 ± 0.2 and 1.8 ± 0.2 mm respectively). The roots were prepared and obdurate with gutta-percha and AH Plus sealer, then divided into one control group to three equal groups according to the type of intraorifice materials (n=10). Except for the control group, the coronal 3-mm of gutta-percha was removed and filled with Ever X Flow, Cention forte, and Bio-C sealer ION. After this, all groups underwent thermocycling ageing (1000 cycles, water temperature (5-55oC), dwell time 30s, and transfer (draining) time 10s between cycles). With micro-computed tomography (µCT), three-dimensional gap volumes at the barrier-dentin contact and the porosity of the barrier materials were investigated.

Results: The results showed a significant difference between the control and three types of barrier materials at (P 0.05); Ever X Flow demonstrated lower values of the internal gap of barrier materials to radicular dentin and porosity while the control demonstrated higher values of the internal gap to radicular dentin; however, there was no significant difference between the control and Bio-C sealer ION.

Conclusion: When compared to teeth treated with endodontics but without intraorifice barriers (IOB), those with IOB have less coronal microleakage.