Comparison of Microleakage of BC Sealer and AH-Plus Sealer vs. Presence of Smear Layer in Single Canal Teeth Using Single-Cone Technique

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Objectives: Microleakage remains a common cause of failure for endodontic treatments. While differences in the properties of sealers could contribute to treatment success, presence of smear layer may also seal dentinal tubules for improved sealing ability. BC sealer has been shown to have improved adhesion and sealing ability than AH Plus sealer, while results on smear layer efficacy remain equivocal. There is a lack of studies comparing the effect of these two factors on microleakage when utilized with single-cone technique. In this study, we compared performance of BC sealer and AH Plus sealer against microleakage when the smear layer is absent vs. present on single-cone technique treated teeth.

Experimental Methods: Forty-six single-rooted, single canal extracted teeth were cleaned, shaped, and obturated using the single-cone technique. Teeth were standardized to length of 20 mm and master apical cone of 35/.04. Four classifications were established: BC sealer without smear layer (BCN), BC sealer with smear layer (BCSM), AH-Plus sealer without smear layer (AHPN), and AH-Plus sealer with smear layer (AHPSM). Controls for each group were filled with an additional 2mm of composite. Methylene blue was placed in the pulp chamber and presence of leakage through the apical foramen was observed. Teeth will be sectioned and microleakage through the root canal will be measured.

Results: Methylene blue leakage through the apical foramen was not observed in any of the samples. Results will be revisited after microleakage through the root canal has been measured.

Conclusion: Our results suggest that proper technique of single-cone obturation is more significant in preventing microleakage than type of sealer or presence of smear layer. At this time, there is insufficient evidence to compare BC and AH Plus sealers and smear layer presence in sealing efficacy.

This study was supported by the UTSD Student Research Program.