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THE TUBULAR PENETRATION DEPTH AND ADAPTATION OF ENDODONTIC SEALERS: A SCANNING ELECTRON MICROSCOPIC STUDY

By

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ABSTRACT

Aim: The aim of this in vitro study was to evaluate the tubular penetration depth and interfacial adaptation among three endodontic sealers – AH plus, Dia-proseal and Cerafill RCS sealer in human extracted teeth.

Materials and methods: 60 human extracted teeth were obtained and were then decoronated to a standardized length of 12mm. After this Biomechanical preparation was carried out and teeth were enlarged to 30/9 % taper. Teeth were then randomly assigned to 3 different groups - Group 1 (AH plus), Group 2 (Dia-proseal), Group 3 (Cerafill RCS). After this sealer application was done using lentulospirals and the roots were obturated. The teeth were stored in 100% humidity at 37°C for 1 week to allow the complete setting of the sealer. Sectioning was carried out under a hard tissue microtome and samples were obtained at a distance of 3mm and 6mm from the apex after which the samples were subjected to Scanning electron microscope and images were analyzed. Statistical analysis was carried out using One-way ANOVA and Tukey's post-hoc test.

Results: The results showed that Group 1 (AH plus) showed highest dentinal tubule penetration and adaptation when compared to Group 2 (Dia-proseal) and Group 3 (Cerafill RCS).

Conclusion: The tubular penetration and adaptation differs with the different physical and chemical properties of the sealers used. AH Plus showed the greatest optimal tubular penetration and adaptation to the root canal wall of the sealers tested.