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Evaluation of smear layer removal using maleic acid with different irrigation techniques

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Objective/Aim of the study: The aim of this study was to evaluate the efficacy of NaviTip, NaviTip FX and EndoUltra in removal of smear layer from the instrumented root canal when used with 7% maleic acid (MA).

Methods: Thirty extracted human maxillary anterior teeth were decoronated to standardize the root length to 15 mm. The canals were enlarged to size F5 using protaper files. 5 ml of 2.5% NaOCl was used as an irrigating agent between each instrument change. Samples were then divided into three groups (n=10) based on irrigation regimen.

Group 1- EndoUltra group: 2.5 ml of 7% MA was irrigated for 30 sec. Then the root canals were irrigated with 5 ml of distilled water for 1 min following which, EndoUltra device was activated for 30 seconds within the canal. The same procedure was repeated once more, so that the total irrigation time with 7% MA and activation time with EndoUltra was 1 min. Group II: Navitip FX group: 5 ml of 7% MA was irrigated using 15 size Navitip FX needle for 1 min.

Group III: Navitip group (control): 5 ml of 7% MA was irrigated using 30 gauge Navitip needle for 1 min. All the specimens were then subjected to SEM analysis.

Results & Conclusions: On intra-group comparison, NaviTip and NaviTip FX groups removed smear layer better in the coronal and middle third when compared to the apical third. However, in EndoUltra group, there was no significant difference between coronal, middle and apical thirds. On inter-group comparison, Navitip group removed smear layer less efficiently as compared to Navitip FX and EndoUltra groups in all the thirds of the root canal. When Navitip FX group was compared to EndoUlra group, there was no significant difference between them in coronal and middle thirds. However, in the apical third, EndoUltra group removed smear layer more effectively. EndoUltra removed smear layer more efficiently than NaviTip FX and NaviTip from the apical third of the root canal system when used along with 7% MA.

Biography

N Vasudev Ballal graduated with a Bachelor degree of Dentistry from the SDM College of Dental Sciences, India. He received Master's degree in the specialty of Conservative Dentistry and Endodontics and PhD degree in Endodontics from Manipal College of Dental Sciences, Manipal University, India. Currently, he upholds the position of Professor in the specialty of Conservative Dentistry and Endodontics. He serves as an Editorial Board Member of 12 international journals and reviewer of 45 international journals. He has received the best reviewer award out of top 10 reviewers in the world by Elsevier publishers and American Association of Endodontists in 2014. He has received several international awards for his outstanding contribution in research activities. He has 95 plus publications to his credit in various international and national journals. His topic of profound interest is on root canal irrigating agents, intracanal medicaments, root canal disinfection, endodontic materials and smear layer. He has participated in various conferences and delivered guest lectures both at the national and international levels. He has authored a chapter on smear layer in text book "*Essentials of Endodontics*". His published manuscripts have been cited numerously as much as 195 times and with H index of 9.

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