

Saturday, September 7, 2013: 11:30 a.m. - 12:30 p.m.

Location: Limonaia

Presentation Type: Poster Session

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Objective: The aim of the study was to verify the existence of a correlation between fluid filtration and tubular penetration of an endodontic sealer.

Methods: Ten pairs of maxillary incisors with a single root canal, circular cross-section, similar sizes and dimensions were selected from a collection. Teeth from each pair were randomly divided in 2 groups. All canals were instrumented using NiTi WaveOne Primary instrument (#25) (Dentsply, Maillefer). In the group 1 all canals were irrigated with 1 mL of 5,25% NaOCl for 30s (Ogna, Muggiò, Italy), followed by 0.5 mL of 10% EDTA for 30 s (Ogna). In the group 2 it's used the same protocol but without the EDTA. A final irrigation of 2.0 mL 5,25% NaOCl for 3m was performed. Root filling was performed with Thermafil-obturators (Dentsply Tulsa, Tulsa, OK) with TopSeal (Dentsply, Maillefer) mixed with 0.1 wt% alizarin to evaluate the penetration depth of the sealer into tubules with confocal microscope (Leica, Wetzlar, Germany).

Microleakage i.e. the volume of a calcein solution infiltrated into the root canal and tubules were evaluated using a digital fluid flow-meter and a confocal microscope.

Results: Confocal microscopy showed a penetration of the sealer into tubules in group 1 of approx. 370 μm at 3 mm from the apex and 630 μm at 5 mm while in group 2 of approx. 22 μm at 3 mm and 37 μm at 5 mm from the apex. The volume of the infiltrated fluid was $0.353 \times 10^{-4} \text{ mm}^3$ for group 1 and $0.397 \times 10^{-4} \text{ mm}^3$ for group 2. The data of calcein penetration into the root canal were in agreement with the fluid filtration results.

Conclusion: A correlation seems to be present between sealer penetration into dentinal tubules and sealability of Thermafil-obturators and TopSeal in root canal shaped with WaveOne Primary file.

Keywords: Dental materials, Endodontics, Microleakage, Root canal fillings and tubules penetration

Presenting author's disclosure statement: ** MISSING DISCLOSURE **

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