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## Influence of the endofluoridation and ultrasonic activation of the sealer on the quality of root canal obturation

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**Introduction:** Endodontic treatment has a significant place among all therapeutic interventions in the teeth treatment. The efficacy of endodontic treatment is determined by the quality performance of a number of dental procedures: medicamentous and mechanical processing of root canals, as well as the qualitative hermetic obturation of the root canals with filling material. Quality of the root canal obturation depends on the degree of adhesion of the sealer to the walls of the root canal and the gutta-percha cones.

**Objective:** Quantitative assessment of the quality of the sealing of the root canal after endofluoridation and sealer's ultrasonic activation.

**Material and methods:** 24 single-canal single rooted teeth were used. After using of conventional and advanced filling method of the treatment endofluoridation with different modes of ultrasonic activation of sealer were used, raster scanning electron microscopy (RSEM) study was performed. All teeth were divided into 4 groups depending on the processing and filling methods.

**Results:** The median value of microspaces in microsections were ranged from 1.4 nm to 10.8 nm. Significantly smaller value of microcracks (1.4 nm) was found in Group 4 samples, sealed by an improved method. In the teeth in Group 3 value of microcracks was 2.5 nm, in the Group 2-6.1 nm. In the teeth, were sealed according to traditional methods (Group 1) the highest result of the microcracks (10.8 nm) value were identified. Objective assessment the quality of root canal obturation and confirming the modified technique effectiveness compared to traditional methods is possible in case of RSEM using.

**Conclusions:** Using of conventional methods of root canal filling does not guarantee a firm attachment of root filling material to roots walls and consequently does not guarantee adequate hermetic obturation. Endofluoridation and ultrasonic activation of the sealer can improve the quality of the apical third of the root canal obturation.