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Fund “Nauka” Project № 16013 Resume – Competition-Based Session 2016:

“Investigation of obturation corrections as a part of minimally invasive treatment of dental caries“

Project leader: Prof. Vladimir Emanuilov Panov, MD, PhD, DSc

Repairment of restorations as an alternative of total replacement is a method completely consistent with the conception of minimal invasive dentistry. The main advantages of this method are that it is very safety for the pulp vitality and the sound teeth tissues, it is faster and easier to be applied, more cost-effective and painless also. Although unconditional advantages, there are still no clear criteria or guidance as to when and how exactly repairs should be made and what should be the treatment of repaired restoration surfaces in order to achieve the best results.

As part of the project, materials and devices were purchased which helps us to investigate the quality and parameters of the connection between “old” and “new” material in repaired restorations. We did several experiments. Extracted human teeth were selected and cavities were made on them. After that they were obturated, artificially aged and some repairments was done. Then we stained and, under a microscope, observed the penetration of a dye between the materials and the cavities. From the degree of micro leakage, we have drawn conclusions about the quality of the connection. We also prepared specimens of composite material that were grinded by various methods used in clinical practice and the increase of their surface roughness was measured using a high-tech device. We have objectively determined the values of the micro-roughness of the obturation material.

Our research sheds light on the problems of repairing obturations, and with its practical focus being the most significant contribution.

Based on the results obtained, we prepared recommendations and a protocol for working on the repair of obturations. The data will also be included in the curricula for students at FDM-Varna, which will improve their professional preparation.

The conducted study was included in the successfully defended dissertation of Dr. Radostina Anastasova on “Early caries diagnosis and repairment of restorations in minimally invasive treatment of dental caries”.

Publications and participation

1. Anastasova R, Panov V, Marinova M, Balcheva G. Repaired restorations - clinical study. 27th Annual Assembly of IMAB, Varna 11-14 May 2017. Poster
2. Anastasova R, Panov V. Repairment of dental restorations. Varna Medical Forum 2018;7(2):45-49.

3. Anastasova R, Dikova Ts, Panov V. Surface roughness of dental composite processed by different techniques. 28th Annual Assembly of IMAB, Varna 11-13 May 2018. Poster
4. Anastasova R, Dikova Ts, Panov V. In vitro study of dental composite roughness and microleakage of repaired obturations by various techniques. J of IMAB. 2019 Jan-Mar;25(1):2419-2425