

TREATMENT OF TRAUMATIC PULPITIS WITH MODERN BIOLOGICAL
METHODS

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Abstract: Treatment of pulpitis using bioceramics ensures the preservation of the functional properties of the pulp, the dentin bridge and prevents periodontal complications compared with filling the pulp with a calcium hydroxide-based material. The effectiveness of treatment in the main group was 72.4%, in the control group – 27.6%.

Key words: traumatic pulpitis, biopolymer, calcium hydroxide.

Introduction. It is known that inflammation of the tooth pulp is a dynamic process that moves from one stage to another and ends with its restoration or necrosis. The expediency of treating reversible pulpitis with a conservative method at the initial stages of the pathological process is based on the unique ability of the pulp to regenerate using materials that stimulate the reparative functions of odontoblasts and create an aseptic environment in the pulp cavity [1, 2]. Traumatic opening of the pulp pulp chamber leads to microbiological contamination of the pulp and, accordingly, to inflammation of the pulp [3]. Reparative processes are directly dependent on the pulp coating material. Most pastes have a unidirectional effect and are used either to remineralize dentin or to eliminate the initial stages of inflammation, and only some of them are able to multifactorially affect both the structure of dentin and the components of the pulp [4, 5]. It follows from the above that the success of treatment is achieved by exposing pulp tissues to materials with bactericidal properties and stimulating the reparative functions of odontoblasts (the volume and quality of new dentin depends on the material used) [1, 2, 6]. One of the first bioactive materials was calcium hydroxide. Some authors critically evaluate the quality of the mineralized (calcified) barrier formed after the use of calcium hydroxide. This is due to the absorption of the material in a humid environment, a decrease in efficiency in contact with air due to partial carbonation, and the appearance of tunnel defects in the formed dentin, which is permeable to microbial toxins [1, 4, 6, 7].

That is why we chose calcium silicate, monobasic calcium phosphate, zirconium oxide, calcium hydroxide, tantalum oxide. The material has a pronounced reparative potential, antibacterial effect (pH =12.4), is chemically stable in a biological environment, is hydrophilic, does not shrink, demonstrates high biocompatibility, bioactivity and high strength [5, 8, 9, 10, 11, 12].

Objective: The study was to evaluate the effectiveness of the treatment of acute traumatic pulpitis using bioceramics based on the results of a clinical study.

Materials and methods: Acute traumatic pulpitis of 20 teeth in 20 patients aged 19-24 years was treated by biological direct pulp filling. In 8 patients of the main group, bioceramics was applied to the exposed pulp, and in 12 patients of the control group, a paste of calcium hydroxide was applied to the exposed pulp. The effectiveness of the treatment was assessed according to the following criteria: there are no clinical signs of inflammation of the pulp, on the X-ray there are signs of the formation of a dentine bridge, the absence of periapical changes.

Results: The use of bioceramic material in patients of the main group provided positive dynamics of treatment of 8 teeth. The need for repeated treatment was diagnosed only in 1 clinical case, in the control group – in 4 cases.

Conclusion. Based on the conducted clinical study, it was found that the use of bioceramic material containing calcium silicate, calcium phosphate, zirconium oxide, calcium hydroxide and tantalum oxide in patients of the main group provided positive dynamics of treatment (12 teeth). The need for repeated treatment was diagnosed in only 1 clinical case during 2 months of follow-up. The use of bioceramics for direct coating of the pulp contributed to the absence of inflammation in the soft tissues of the tooth due to the antibacterial properties of the material (pH = 12.4), which is a clinically confirmed low incidence of complications after treatment.

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