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# MODERN METHODS OF TREATMENT DESTRUCTIVE FORMS OF PERIODONTITIS

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## ABOUT ARTICLE

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**Abstract:** Chronic apical periodontitis is a focus of chronic poisoning and sensitization of the body and poses a potential health hazard. Treatment of chronic apical periodontitis is one of the most important problems faced by dentists in their practice. Conservative treatment is aimed at removing microflora, stimulating regenerative processes in the periapical region and completely closing the root canal system and periodontal tissues to prevent re-infection. In addition, this method is the least traumatic for the patient. The question of the influence of tools and agents on destructive processes in the periapical root canal has been widely discussed for a long time and to the present.

## INTRODUCTION

With the decompression method, drainage is installed in the apical process of the root in the center of the lesion. It requires periodic irrigation of the node, regular lengthening of the drainage and its replacement at various intervals. The drains include modified cannulas, labile fragments of the dam, stented polyethylene tubes, hollow tubes, polyvinyl tubes, drainage catheters and radiopaque latex tubes. There are no standard requirements for the duration of drainage, depending on the location and size of the lesion, there may be different sizes and duration. The duration of drainage can range from 2 days to 5 years; 0.12% chlorhexidine can be used daily to irrigate the lesion through the drainage lumen. This is a simple procedure that is easily tolerated by patients with minimal risk of damage to adjacent vital structures. However, there are a number of disadvantages: inflammation of the oral mucosa

adjacent to the drainage tube, displacement and obstruction of the drainage tube, the occurrence of acute or chronic infection. A more responsible attitude to patient care is also needed. In the presence of large radial cysts or non-cystic cellular changes, decompression is contraindicated, since there is no fluid-filled cavity and there is no need for decompression. Aggressive non-surgical decompression using the Endo-eze vacuum system for decompression of large periapical lesions by creating negative pressure. The aspirator is connected to a microneedle. It is injected into the root canal and activated for 20 minutes to create negative pressure. The exudate is sucked off. After partial cessation of exudate outflow, the access cavity is closed with temporary cement to prevent the penetration of microorganisms. Unlike the decompression method, this method is minimally invasive and causes less discomfort to the patient, since the entire procedure is performed through the root canal. The method of aspiration of the root canal. To overcome the disadvantages of traditional methods of aspiration and irrigation, a simple method of root canal aspiration was proposed. In this method, an aspiration needle is inserted through the opening of the root canal, and the cystic fluid is aspirated from the root canal. This method eliminates the possibility of injury to the cheek or palate. In addition, it minimizes the possible discomfort of the patient. However, strongly curved root canals limit the use of this method. In addition, with narrow root canals, for example, the lower incisors, this method may be unacceptable, since the root canal may be expanded too much for the aspiration needle to penetrate into the bone cavity and weaken the tooth. The use of methods of suction or aspiration of the root canal in the maxillary or mandibular sinus is undesirable. Application of physical factors. Physiotherapy is one of the most common methods of treating periodontitis of the root canal. Medicinal electrophoresis, depophoresis, ultrasound therapy and ozone therapy are essential elements in the complex treatment of apical odontitis. It is also known that physical factors play an important role in increasing the effectiveness of medicines. Due to its pronounced bactericidal effect, ozone therapy reduces the use of strong disinfectants, such as 3-5% solutions of sodium hypochlorite, which have toxic and allergic effects. Ozonation with copper hydroxide and calcium hydroxide not only has a bactericidal effect, but also clogs the lumen of complex root canals, and also increases the activity of osteoblasts in the periapical tissue. During electrophoresis of root canals, dissociated ions of drugs, such as potassium iodide, antibiotics and enzymes (trypsin), easily penetrate into the internal environment. Ultrasonic irradiation of a liquid medium generates vapor bubbles (cavitation effect), which create a vortex flow around the endodontic nozzle, destroying intracanal deposits and heating the disinfectant solution [8]. In addition to the physical therapy of apical periodontitis described above, UHF electric fields, alternating currents, microwave therapy and dersonvalization are widely used. However, it should be remembered that physiotherapy has strict indications and contraindications. Thus, the influence of

physical factors is used in the process of pharmacotherapy and instrumental treatment to reduce the inflammatory reaction before and after root canal filling and relieve post-sealing pain. The technique of temporary filling of root canals In the modern concept of periodontitis treatment, the tooth cavity should be left open only in the presence of purulent exudate. In other cases, the root canal should be sealed with a drug that has antibacterial, anti-inflammatory and stimulates regenerative processes in periodontal tissues. The drugs can remain in the root canal from several days to several months. Strong antiseptics (for example, iodoform, thymol, camphor, menthol, paraformaldehyde, paraclorphenol), antibiotics, corticosteroids, metronidazole and calcium hydroxide-based substances can be used as temporary filling preparations. However, since some bacteria are resistant to it, ciprofloxacin and minocycline have been added to it. It has been shown that when used together under the influence of ultrasound, these drugs effectively penetrate through the dentine tubules of the root canal cavity. Although the number of drugs used in such treatment is small, it is necessary to study the sensitivity of the microflora of the root canal to the action of antibiotics. It was found that the disadvantage of triple antibiotic pastes is tooth discoloration caused by minocycline [10]. Corticosteroids are present in the mixture in small quantities and do not affect the defenses of periodontal bacteria, reducing inflammation and allergic reactions. Antifungal drugs, such as clotrimazole, reduce the penetration of fungi into the root canal. Calcium hydroxide is widely used in endodontics due to its bactericidal properties. The mechanism of action of calcium hydroxide injected into the root canal is as follows: 1. highly alkaline medium (pH about 12.4) leads to bactericidal action, stopping bone resorption and lysis of necrotic tissues; 2. calcium ions are involved in bone formation and blood clotting reactions; 3. calcium hydroxide binds to water in the channel and increases in volume by 2.5 times, which can block and sequester macro- and micro-channels. For the first time, calcium hydroxide as a means for coating pulp was proposed by Hermann in 1930. Since then, clinical studies have been conducted, some of which confirmed and others refuted the effectiveness of the drug for the treatment of destructive periodontitis. However, leaching of calcium hydroxide residues in the root canal may be difficult. It has been proven that oil-based calcium hydroxide pastes are less likely to be washed out of the root canal than pastes mixed with distilled water. Therefore, it is recommended to remove calcium hydroxide-based pastes using ultrasound. According to Orucoglu (2008), bone tissue regeneration is observed around the paste, but in some cases complete resorption of the paste does not occur; barium sulfate, which is added to the paste based on calcium hydroxide as a radiopaque substance, prevents the paste from resorption outside the root tip. Studies have also shown that prolonged exposure to calcium hydroxide on root dentin causes teeth to become more brittle and brittle. Synthetic bone-forming materials (biomaterials). Currently, an active search is underway for materials that act directly on the

focus of bone tissue destruction. Synthetic bone-forming materials based on calcium hydroxyapatite represent a new generation of compounds with many advantages. To improve the properties of the material, calcium phosphate, β-tricalcium phosphate, collagen, antimicrobial agents, platelet-rich fibrin, growth factors and nickel-plated titanium are added to it. It is known that synthetic calcium hydroxyapatite activates endogenous growth factors and promotes remineralization of atrophic bone; V.N. Lenev proved that the use of bone-forming materials is a highly effective method of treating destructive periodontitis. Hydroxyapatite is synthesized under the influence of high temperatures and, although it does not occur in nature, triggers biologically active reactions similar to natural processes occurring in bone tissue. Osteoblasts attached to hydroxyapatite absorb it, and the mechanism of cell proliferation and differentiation occurs. Differentiated osteoblasts produce type I collagen, alkaline phosphatase, proteoglycans, matrix proteins such as osteocalcin and osteonectin, as well as bone sialoproteins, which are known markers of bone formation. The main properties of synthetic materials include biocompatibility, bioactivity, biodegradability, porosity, osteoconductivity and osteoinductivity. Biocompatibility refers to the good portability of the material and the possibility of its implantation. Bioactivity refers to the property of the material to bind directly and firmly to the bone tissue. Biodegradability refers to the absorption of biomaterial by cells of a living organism. The porous nature of bone-forming materials ensures the migration of osteoblasts and mesenchymal cells and the synthesis of young bone tissue. In addition, the porous surface improves the mechanical relationship (interpenetration) between the biomaterial and the surrounding newly formed bone, providing greater mechanical stability. Osteoconductivity refers to the ability of a material to act as a framework that causes the formation and germination of newly formed bone along its surface. Osteoinductivity is the ability of the material to cause differentiation of mesenchymal cells from the surrounding non-bone tissue into chondrocytes and osteoblasts, i.e. osteogenic cells, which usually manifests itself in the formation of bone tissue after implantation of the biomaterial into a heterotopic site. Synthetic bone-forming materials are increasingly being used in the treatment of destructive periodontitis. Among them are "Hydroxyapatit-gel", "CollapAn", "Trapex-gel", "Hydroxyapol", "Hindost", "Ostim-100". Treatment of acrodontitis was carried out by cystectomy, and the bone defect was filled with calcium hydroxyapatite. In 78.9% of patients of the main group, the bone tissue in the destroyed area was completely restored, and complications occurred in 7% of patients, which is 3 times less than in a comparable group of patients where blood clots were used to fill in the bone defect. Practical experience and knowledge accumulated by clinicians and researchers show that there are advantages and disadvantages in the methods and means of conservative treatment of periodontitis.

Conclusion: The use of certain techniques and materials may be limited by indications and contraindications due to the clinical situation. However, innovative materials are constantly being developed and tested that contribute to the restoration of the destructive process in the bone tissue, and techniques that reduce the traumatism and risks of invasive treatment.

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