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TREATMENT OF PULPITIS OF TEMPORARY TEETH WITH THE USE OF DEVITALIZING PASTES

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Annotation: Pulpitis inflammation of the neurovascular bundle, popularly called the nerve of the tooth - usually develops as a result of untreated caries. Patients with acute toothache come to the dentist wanting to remove the nerve. However, in some cases this is not required.Dentists at the Regale Center for Innovative Dentistry, whenever possible, use biological methods for treating pulpitis to preserve the dental nerve, since without blood vessels, dentin and enamel do not receive nutrition and are quickly destroyed. Surgical removal of the dental nerve is resorted to only in cases of severe inflammation of the pulp. Let us consider in detail the classification of methods for treating pulpitis, indications and techniques for each of them.

Key words: pulpit , inflammation, nerve, caries.

Studies have shown that, under certain conditions, dental pulp is capable of restoration. This discovery made it possible to introduce a biological method of treating pulpitis into dental practice. It is aimed at eliminating inflammation and preserving the function of the neurovascular bundle to deliver necessary substances (calcium, fluorine, etc.) to dentin and enamel. The nerve is not removed. Conservative treatment consists of using therapeutic pads with antibacterial and calcium-containing drugs. Indications and contraindications for the biological method

Conservative treatment of pulpitis is carried out in the absence of infection or in the initial stage of inflammation. Indications for the biological method of treating pulpitis:

- deep caries, unopened pulp chamber - the dentist removes all damaged dentin tissue, during the treatment process often access to the pulp chamber is opened;
- tooth trauma with exposure of the pulp - a tooth fracture/crack is an entry point for infection;
- aseptic inflammation - occurs as a result of thermal burn of the pulp due to improper teeth whitening or ultrasonic cleaning;
- acute pulpitis - inflammation of the pulp develops gradually, it can be preserved when visiting a dentist in the first days after the onset of pain.

The state of the neurovascular bundle is determined by electroodontometry. If the pulp is alive (2–6 μA readings), the nerve can be preserved through conservative treatment. Reduced electrical excitability (20–40 μA) indicates inflammation of the dental nerve, and values of 100 μA or more indicate its necrosis. Irreversible pulpitis is also indicated by expansion of the periodontal ligament on an x-ray.

The electrical excitability of the pulp decreases with age. Therefore, electroodontometry indicators are not significant in the treatment of pulpitis in elderly patients. In this case, the dentist focuses on the X-ray results and the clinical picture.

The biological method of treating pulpitis is advisable only if the following conditions are met:

- no more than 2–3 days have passed since the onset of acute pain;
- the patient is no more than 30 years old, the regenerative ability of the pulp is preserved;
- X-ray examination shows no signs of periodontitis/periodontitis.

Indications for treatment of pulpitis using the method of biological restoration of the pulp chamber are not taken into account if the patient plans to undergo dental prosthetics in the future. Conservative treatment is not advisable in cases where the carious process develops in the neck of the tooth and

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affects its root system, and there are hard deposits in the root canals (formed against the background of metabolic disorders in the body, detected on x-rays). Contraindications to the biological method are also inflammatory foci in the periodontium, granulomas and periodontal cysts.

Indirect pulp capping method

This method of treating pulpitis of permanent teeth is used when there is a minimum layer of healthy dentin above the pulp chamber, which protects the nerve from the penetration of microorganisms. Stages of treatment:

- injection of local anesthetic . The dosage of the drug is calculated taking into account the patient's age/weight. You must first do an allergy test for anesthetics used in dentistry;
- removal of carious tissues with a drill . Drilling is carried out as carefully as possible, under the control of a microscope;
- antiseptic treatment . The cavity is washed with an antiseptic solution (for example, chlorhexidine) and then thoroughly dried;
- applying a therapeutic bandage . The dentist places an onlay soaked in calcium hydroxide at the bottom of the cavity in the tooth. This drug stimulates the formation of dentin;
- installation of a temporary filling . It is placed for 4–7 days;
- repeat visit . The patient is again given an x-ray of the treated tooth. If there are no signs of inflammation or pain, the temporary filling is replaced with a permanent one. If the inflammatory reaction has decreased, it is possible to re-apply the therapeutic bandage at intervals of 5–7 days. The patient must be explained that depending on tissue regeneration, treatment may take six months. The absence of even a minimal therapeutic effect is a direct indication for surgical treatment of pulpitis.

A conservative method of treating pulpitis of primary teeth is carried out if there is a lot of time left before the eruption of permanent units. Baby teeth "hold" their place and do not allow neighboring units to move, preventing the formation of a malocclusion.

Direct pulp capping method

This method of treating pulpitis is used when the pulp chamber is opened and there is a minimal inflammatory reaction. A bandage with an antibacterial drug is applied to the tooth. The therapeutic mixture may include enzymes, corticosteroids and vitamins to accelerate the elimination of inflammation and activate dentin regeneration.

When performing direct pulp capping, it is important to quickly stop bleeding and carefully remove the clot. Otherwise, the blood clot will prevent the contact of medicinal substances with the pulp and reduce the therapeutic effect of the dressing.

As in the previous method of treatment, a repeat x-ray is taken after 5–7 days. If pulp inflammation has decreased but not disappeared, the antibacterial pad is changed. Only after it is completely eliminated, a permanent filling is placed on the tooth. The patient must understand that such treatment does not always preserve the pulp. It all depends on the individual characteristics of the body.

The MTA (Mineral Trioxide Aggregate) material, when directly covering the pulp, allows you to quickly eliminate inflammation and, unlike calcium hydroxide, has adhesive properties and hermetically seals the pulp chamber.

Depending on the involvement of the pulp in the inflammatory process and the general condition of the patient, dentists use vital (removal with an extractor) or devital (application of paste that kills the nerve) method of treating pulpitis by amputation (partial removal) or extirpation (complete removal) of the neurovascular bundle.

Indications and contraindications for the surgical method

Pulp amputation/extirpation is performed in the following cases:

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- conservative therapy for initial pulpitis did not give the expected result;
- Irreversible pulpitis was initially diagnosed (long-term "pulpitis" pain, low electrical excitability of the pulp, dilated periodontal ligament on x-ray);
- pulpitis develops against the background of periodontitis or is complicated by periodontitis (x-rays reveal granulomatous lesions or a cyst at the apex of the tooth root);
- the patient does not agree to long-term treatment of initial pulpitis;
- it is planned to replace a tooth that has been destroyed by more than 2/3;
- mechanical damage to the roots of the tooth.

The amputation method for treating pulpitis is postponed if the patient has the following diseases:

- recent heart attack;
- stomatitis, herpes on the lips, ARVI;
- hypertensive crisis, high a/d numbers;
- low blood clotting rates (risk of heavy bleeding);
- epilepsy;
- convulsive contraction of the jaws (inability to open the mouth);
- congenital microstomia (narrow mouth gap);
- I and III trimester of pregnancy (if the patient does not have acute pain).

A week before the surgical method of treating the pulp, it is recommended to stop taking antiplatelet medications that thin the blood (aspirin, thrombotic ACC, cardiomagnyl, etc.).

Vital amputation

The essence of the technique, otherwise called pulpotomy, is the partial removal of the pulp. Using an extractor, the dentist removes the coronal part of the neurovascular bundle and its damaged parts in the root canal. When treating multi-rooted teeth, the doctor, if possible, preserves the nerve in at least one canal. However, there is a strict limitation for such treatment: the patient's age is under 45 years. The nerve is completely removed in case of advanced pulpitis of a single-rooted tooth and in cases of planned prosthetics.

Stages of treatment of pulpitis using the vital amputation method:

- injection of an anesthetic drug;
- drilling out carious tissues and opening the pulp chamber;
- removal of the coronal part of the pulp. To stop bleeding, the dentist uses a hemostatic sponge or cotton swab;
- removal of damaged pulp from the dental canal and its expansion with special files;
- antiseptic treatment of the operated dental canal, drying it and filling it with plastic gutta-percha;
- applying a medicinal bandage with calcium hydroxide to the preserved areas of the pulp and installing an insulating gasket that prevents irritation of the living pulp by the filling material;
- temporary tooth filling;
- repeat x-ray in 1–4 weeks. In the absence of inflammation and the viability of the preserved part of the pulp, a permanent filling is installed.

The procedure for partial amputation of the pulp using the vital method is difficult to perform, and any filling has an expiration date. Therefore, we recommend installing a photopolymer filling. With proper dental care, it will last up to 10 years.

Vital extirpation

This method is called vital pulpectomy. Complete removal of the pulp using an extractor is resorted to if necrosis has spread to all root canals or vital amputation has not stopped the inflammation.

Stages of the vital method of treating pulpitis with complete removal of the dental nerve:

- local anesthesia;

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- preparation of a carious cavity;
- extraction of the coronal part of the dental nerve;
- alternate expansion of the canals and removal of the root pulp;
- antiseptic treatment, drying;
- step-by-step filling of canals, application of a temporary filling;
- a week later installation of a permanent filling.

When treating pulpitis using the vital extirpation method, before filling the root canals, the dentist measures their length using an apex locator. The use of liquid gutta-percha allows you to seal the root canals as tightly as possible. Therefore, in the absence of inflammation in the periodontium, it is permissible to install a permanent filling already at the first appointment.

Devital extirpation

The devital method of treating pulpitis involves killing the dental nerve using arsenic or paraformaldehyde (less toxic) paste. Unlike vital pulpectomy, with this method the pain lasts for several more days. Therefore, the extirpation method of treating pulpitis using a devitalizing paste is resorted to only in extreme cases, for example, in cases of allergies to anesthetics and severe cardiovascular pathologies with a high risk of developing arrhythmia.

The dentist minimally drills dentin destroyed by caries and provides access to the pulp chamber. Next, a devitalizing paste is placed into the formed cavity and closed with a temporary filling. The duration of nerve necrosis depends on the type of drug used and the number of tooth roots:

- arsenic paste - on a single-rooted tooth kills the pulp within 24 hours, on a two-/three-rooted tooth - within 2-3 days;
- formaldehyde paste - applied to a single-rooted tooth for one week, to a multi-rooted tooth - for 10-14 days.

The dentist must clearly calculate the dose of the devitalizing paste. With its deficiency, the dental nerve dies only partially, but the pain continues. Excess of devitalizant is fraught with necrosis of periodontal tissues.

After the specified period, the patient comes for a follow-up visit. The doctor removes the temporary filling and then the pulp, creates a cavity in the crown of the tooth and expands the root canals. After antiseptic treatment and drying, the tooth is filled. Since after killing the nerve the tooth is completely insensitive to irritants, anesthesia is not required.

Devital amputation

In case of tortuous root canals, the devitalizing paste is not capable of killing the entire nerve. After removal of the coronal pulp, the neurovascular bundles remaining in the root canals are impregnated with resorcinol-formalin paste. In 2-3 sessions, it mummifies the root pulp, preventing its necrosis.

After treatment of pulpitis using the method of devital amputation followed by the use of resorcinol-formalin paste, the tooth acquires a pink color and becomes extremely fragile. It is not possible to refill such a unit or install a crown on it. The only way to restore the dentition is to remove a resorcinol tooth, install a bridge, or costly implantation. Therefore, in modern dentistry, the devital method of treating pulpitis with partial amputation of the dental nerve is almost never used.

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