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NEW METHODS OF PULPITIS TREATMENT IN MODERN DENTISTRY

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Annotation. Pulpitis remains one of the most common pathologies in therapeutic dentistry. Current trends in treatment are aimed at preserving the viability of the pulp, minimizing the invasiveness of the intervention and increasing the prognostic effectiveness of therapy. The article discusses new methods of pulpitis treatment, including vital pulpotherapy using bioceramic materials, regenerative endodontics, the use of laser technologies, ozone therapy and modern protocols of antiseptic root canal treatment. The advantages and limitations of these approaches are analyzed. It is shown that the development of biomaterials and regenerative technologies significantly changes the paradigm of pulpitis treatment, shifting the focus from pulp extirpation to its preservation and restoration.

Keywords: pulpitis, vital pulpotomy, bioceramics, regenerative endodontics, laser therapy, minimally invasive dentistry.

Introduction. Pulpitis is an inflammatory process in the neurovascular bundle of a tooth that occurs as a result of a carious lesion, injury, or iatrogenic factors. Traditionally, pulpitis treatment has been limited to complete extirpation of the pulp, followed by mechanical and medical treatment of the root canals and their obturation.

However, modern research in the field of biomaterials, tissue engineering and microbiology has contributed to the development of the concept of biological treatment aimed at preserving the viability of the pulp and stimulating its regeneration. This is due to the understanding of the important role of pulp in trophism and tooth protection.

The purpose of this work is to analyze modern methods of pulpitis treatment and evaluate their clinical effectiveness.

Materials and methods.

The work is carried out in the format of an analytical review of modern scientific publications and clinical recommendations on therapeutic dentistry. The analysis includes data on the use of bioceramic materials, regenerative endodontics, laser technologies, ozone therapy, and modern protocols for antiseptic root canal treatment.

Results and discussion.

1. Vital pulpotherapy using bioceramic materials

Modern vital pulpotomy is considered as an effective alternative to extirpation in reversible and some forms of irreversible pulpitis.

Of particular importance are bioceramic materials based on calcium silicates (MTA, Biodentine, etc.), which have the following properties:

- Biocompatibility;
- stimulation of the formation of reparative dentin;
- tightness;
- pronounced antimicrobial activity;
- alkaline reaction of the medium.

Unlike calcium hydroxide, which was previously widely used in pulpotherapy, bioceramics provides a more predictable formation of the dentinal bridge and a lower risk of microflow. Clinical studies demonstrate a high percentage of dental vitality retention while following the treatment protocol.

2. Regenerative endodontics.

Regenerative endodontics is an innovative field based on the principles of tissue engineering. The method is especially relevant in the treatment of immature teeth with necrotic pulp.

The protocol includes:

• thorough antiseptic treatment of the canal;
• creating a blood clot as a natural matrix;
• the use of biocompatible sealing materials;
• stimulation of the growth of apical papilla stem cells.

As a result, it is possible to continue root formation, thicken its walls and close the apex. The method demonstrates significant regenerative potential, but requires strict adherence to the indications and high clinical qualifications of the doctor.

3. Laser technologies in the treatment of pulpitis.

The use of diode, erbium and Nd:YAG lasers allows you to:

• sterilize root canals;
• reduce bacterial load;
• reduce the inflammatory response;
• stimulate regenerative processes.

Laser therapy improves the prognosis of treatment due to deeper disinfection of hard-to-reach areas of the root canal system. An additional advantage is the reduction of postoperative pain.

4. Ozone therapy and modern antiseptic methods.

Ozone has pronounced bactericidal, fungicidal and virucidal properties. Its use is possible at the stages of treatment of the carious cavity and root canals.

Also actively implemented are:

• ultrasonic activation of irrigants;
• the use of sodium hypochlorite in combination with EDTA;
• Photodynamic therapy.

The complex application of these methods increases the effectiveness of sanitation of infected tissues.

5. Minimally invasive approach.

The modern concept of pulpitis treatment is based on the principles of minimal invasion. Maintaining the maximum volume of healthy tooth tissues allows:

• increase its mechanical strength;
• reduce the risk of fracture;
• Extend the service life of the restoration.

The use of an operating microscope and magnifying systems significantly improves the accuracy of the intervention.

Conclusion.

Modern methods of pulpitis treatment show significant progress compared to traditional approaches. The main trend is the transition from radical extirpation of pulp to its preservation and regeneration.

The most promising areas are:

- application of bioceramic materials;
- Regenerative endodontics;
- Laser technology;
- Advanced antiseptic treatment methods.

Further research should focus on standardizing clinical protocols and evaluating long-term treatment outcomes.

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