

ASSESSMENT OF THE CLINICAL EFFECTIVENESS OF MINERAL TRIOXIDE AGGREGATE (MTA) IN THE TREATMENT OF PULPITIS IN CHILDREN WITH PRIMARY DENTITION FOLLOWING ORTHODONTIC TREATMENT

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Introduction.

Pediatric dentistry and orthodontics are closely related fields. Children's teeth perform not only the chewing function, but also the function of maintaining space for permanent teeth. International studies have shown that early extraction of children's molars can cause mesial displacement of adjacent teeth within 6 months (Northway et al., 1984). This increases the risk of space deficiency and malocclusion during the eruption of permanent teeth.

Complications of caries in deciduous teeth, especially pulpitis, are one of the most common problems in children. If pulpitis is not treated effectively in a timely manner, it can lead to tooth extraction. In children undergoing orthodontic treatment, such conditions force a change in the treatment plan.

In recent years, bioceramic materials, including Mineral Trioxide Aggregate (MTA), have shown high efficacy in pulpotomy. Since the introduction of MTA into endodontic practice by Torabinejad et al. (1993), its biocompatibility and hermetic properties have been confirmed in numerous studies.

Foreign literature has shown that MTA demonstrates a clinical success rate of 85–95% in pulpotomy (Agamy et al., 2004; Holan et al., 2005). The recommendations of the American Academy of Pediatric Dentistry (AAPD) indicate that MTA is an effective and safe material for vital pulpotomy of deciduous teeth.

Compared with formocresol, MTA has the advantage of causing less inflammation in the periapical tissues and forming a reparative dentin bridge. Calcium hydroxide has been reported to increase the risk of internal resorption in primary teeth.

From an orthodontic point of view, the preservation of the vitality of primary teeth ensures the natural course of their physiological resorption. Baume (1950) noted that the preservation of primary teeth is a decisive factor in the correct formation of the occlusion of permanent teeth. However, studies specifically aimed at evaluating the effectiveness of MTA in children undergoing orthodontic treatment are limited. This aspect determines the scientific relevance of this work.

In children with premature loss of primary teeth:

- Insufficient space for premolars to erupt
- Narrowing of the dentition
- Malocclusion of molars is observed.
- Therefore, when planning an orthodontic treatment, it is important to preserve the

functional integrity of primary teeth.

Primary teeth treated with MTA retain structural stability even under the influence of orthodontic appliances.

- Preservation of pulp vitality ensures proper root resorption and the development of the dentition is not disturbed.

- This increases the effectiveness of orthodontic treatment, as the teeth maintain their physiological position.

Purpose.

To study the clinical and radiological effectiveness of pulpitis treatment with MTA in children with primary teeth undergoing orthodontic treatment.

Tasks.

- Analysis of clinical cases of pulpitis in deciduous teeth;
- Development of a vital pulpotomy protocol;
- Evaluation of clinical signs after treatment;
- Monitoring radiographic changes;
- Analyze the impact of orthodontic treatment on the process .

Methods.

The study is planned to be conducted as a prospective clinical observational study.

The study is intended to involve children aged 5–9 years undergoing orthodontic treatment. Inclusion criteria include primary molars diagnosed with vital pulpitis.

Treatment stages:

1. Local anesthesia;
2. Removal of carious tissue;
3. Coronal pulp extirpation;
4. Stop bleeding;
5. Placement of MTA in the pulp chamber;
6. Hermetic restoration.

Evaluation is performed at 3, 6, and 12 months. Clinical criteria: absence of pain, lack of mobility, no swelling, no fistula. Radiological criteria: absence of pathological resorption and radiolucent zone.

Expected results.

Treatment with MTA is expected to ensure functional preservation of deciduous teeth, reduce the risk of pathological resorption, and increase the effectiveness of orthodontic treatment.

The preservation of children's teeth serves as space maintenance, creating optimal conditions for the eruption of permanent teeth. At the same time, the stability of teeth is ensured by the influence of orthodontic appliances.

The results of this study may serve to improve clinical protocols at the intersection of pediatric orthodontics and therapeutic dentistry.

Conclusion.

Children's teeth are important for the correct formation of occlusion in children. Their early loss can lead to orthodontic complications. Modern bioceramic material - MTA is a promising method for the treatment of pulpitis of children's teeth due to its high biocompatibility and hermetic properties.

Using this method in children undergoing orthodontic treatment allows for the preservation of teeth until the period of physiological replacement and increases the effectiveness of treatment.

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