

Comparative Effectiveness of Osteoplastic Material in the Treatment of Destructive Forms of Ostitis

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Abstract: The prevalence of complicated cases of ostitis and related complications is a serious problem in the field of dentistry, affecting both patients and treating clinicians. Despite the variety of modern treatment approaches and the many methods available to save teeth, the problem remains important. This is due to the fact that it is not always possible to achieve positive results in restoring the tissues around the root of the tooth after pathological changes.

Key words: osteoplastic materials, bone microporosity, bone macroporosity, jawbone, regeneration.

Introduction. Destructive forms of chronic ostitis pose significant problems. Sometimes the inflammatory process can spread not only to the dental tissues but also to the bone tissue surrounding the roots of the teeth, including neighbouring teeth, which may result in the need to extract several teeth. Inflammation may also involve nearby anatomical structures such as the maxillary sinus, mandibular canal and salivary glands, increasing the risk of serious complications [3,4].

In addition, predisposition to cyst and neoplasm formation may lead to recurrence of the disease even after surgical intervention [1,2,3].

Chronic inflammatory foci in the periapical region can contribute to the development of odontogenic inflammation in the maxillofacial zone, reducing the general resistance and immune status, as well as influencing the pathogenesis and progression of diseases of internal organs and systems [2,3]. Treatment complications can occur due to delays in diagnosis, errors in endodontic treatment, and excessive stress on the teeth used as support [1,5]. Despite the wide range of therapeutic methods, it is not always possible to achieve the desired results, which emphasises the need to search for new approaches to the treatment and rehabilitation of patients with such pathology. One of the promising trends in endodontic treatment of destructive forms of ostitis is the use of osteoplastic materials to restore the bone defect in the periapical zone, although the modern market offers many alternative means and preparations [3,4].

Purpose of the study. To determine the effectiveness of modern osteoplastic preparations of domestic production in combination with the methods of modern endodontic technologies.

Materials and methods of the study. In this study 20 patients with the diagnosis of chronic destructive ostitis, who were recommended endodontic treatment with the use of oss.uz, took part. Exclusion from the study was provided for cases with contraindications to X-ray examination, pregnancy, lactation, age over 60 years and presence of serious general medical pathology.

Treatment of patients included a complex of conservative methods. At the first stage, endodontic treatment with the

ProTaper system (Dentsply, USA) was performed, and the root canal was filled with oss.uz.

At the second stage, the root canal was filled by lateral condensation using AH+ siler and gutta-percha posts, and the crown of the tooth was restored with photocomposite material.

The patients were divided into two groups of 10 patients each, depending on the osteoplastic preparation used. The bone defect was filled with the selected preparation.

For the first group of patients, endodontic treatment was performed in the traditional method.

The second group of patients used the material oss.uz), based on the pure phase of β -tricalcium phosphate and consisting of a mixture of β -tricalcium phosphate (60%) and hydroxyapatite (40%), obtained by sintering of synthetic raw materials without the addition of animal components.

The post-treatment bone structure status was assessed based on the clinical condition before treatment, the results of radiological examination and annual monitoring.

Results of the study. During the recovery period after treatment, patients from both groups did not experience any complications. During the following year, patients had no complaints and X-rays showed improved bone health.

In the first days after the intervention, the majority of patients (37.9% of the first group and 65.1% of the second group) experienced no pain or only mild discomfort. Moderate pain was noted in 43.7% of patients in the first group. The pain usually resolved by the third to fourth day after treatment.

One patient of the first group had a short-term temperature increase up to 37.5°C during the first day after the procedure.

Radiological examination after 1, 3, 6 and 12 months showed an increase in bone density around the focus of destruction, which is a favourable sign of reparative osteogenesis.

In one case from the first group, the tooth had to be extracted after a year due to pain and gingival oedema, as well as due to incomplete healing of the periapical focus of bone destruction, as seen on the radiograph.

Thus, the efficacy of treatment of chronic destructive osteitis using oss.uz materials was 98%.

Conclusions: Clinical results showed the absence of inflammatory reactions and complications in the second group. Radiological evaluation after one year revealed an increase in bone density in the defect area, which indicates the probability of new bone tissue formation. A comprehensive approach in the treatment of chronic destructive osteitis with the use of preparations containing hydroxyapatite contributes to the preservation of teeth and prevention of further destruction of bone tissue. Clinical data allow us to recommend the use of oss.uz as osteoplastic materials in outpatient practice for the treatment of chronic destructive forms of ostitis.

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