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Efficiency of Use of Osteoplastic Preparation and Auto plasma of Blood in Cysts at the Root of the Teeth on the Maxillae

Yusupov Sh.A
Bukhara state medical institute

Abstract: Until now, there is no unity of views of maxillofacial surgeons on the problem of preserving teeth located in the area of cystic formation. This article presents a study of 24 patients hospitalized for small root apex cysts in the upper jaw. After the operation in the main group of patients, the residual bone cavity was filled with an osteoplastic preparation and autoplasma of blood, which showed significant advantages over traditional methods of treating cysts in the root part of the teeth in the maxillae.

Key words: Jaw Cysts, Autoplasma Of Blood, Osteoplastic Preparation, Root.

Relevance: Improving the methods of treatment of odontogenic jaw cysts continues to be an urgent problem in surgical dentistry. This is due to the prevalence of the disease, the possibility of complications such as cyst suppuration, the development of osteomyelitis, jaw deformity, tooth loss, the occurrence of a pathological fracture and even the so-called central jaw cancer from the epithelium of the cyst wall, as well as quite often occurring relapses after surgical treatment.

Cysts at the root of the teeth are a common disease among other odontogenic formations. In the practice of surgical dentistry, cysts at the root of the teeth in the maxilae account for 78-96% of the total number of jaw diseases. These figures indicate the relevance of the problem of treatment of this pathology.

Over the past half century, the treatment of cysts has not changed much, although some new directions have appeared in it. So, to prevent early complications during cystectomy, the bone cavity after removal of the membrane began to be filled with biocomposite materials. This is due to the fact that with a standard surgical intervention there is a reduction in the blood clot, and this often leads to infection of the bone cavity and subsequent complications. Today, various osteoreparative agents are widely used in modern surgical dentistry and maxillofacial surgery.

The main surgical interventions in the treatment of extensive jaw cysts are cystotomy, cystectomy and two-stage surgery. Indications for cystotomy are large cysts of the maxillae, growing into the maxillary sinus with destruction of the bone bottom of the bottom cavity and palatine plate, extensive cysts of the maxillae with significant thinning of the bone walls of the jaw, old age of the patient or the presence of severe concomitant diseases. Indications for cystectomy are small cysts within 1-2 intact teeth, an extensive cyst of the maxillae, in which there are no teeth in its zone and the base of the jaw of sufficient thickness (up to 1 cm) is preserved, a large cyst on the maxillae, with a preserved bone wall the bottom of the nasal cavity and the maxillary sinus [1].

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The choice of the method of cystotomy or cystectomy in the treatment of extensive jaw cysts is discussed by many authors. Some are supporters of cystotomy, believing that cystectomy is a traumatic operation with the possibility of damage to adjacent intact teeth, damage to the neurovascular bundle, pathological fracture of the lower jaw, the likelihood of opening the maxillary sinus and nasal cavity, the possibility of autolysis of a blood clot located in the bone cavity [2 ,3].

There is no doubt that the development of cystic diseases of the jaw is determined by the anatomical and physiological features of both the maxillae itself and the soft tissues surrounding it, as well as the presence of a significant amount of conditionally pathogenic microflora in the oral cavity. At the same time, it is traditionally considered that the main causes contributing to the occurrence of cysts are late contact with a medical institution, diagnostic errors and incorrect treatment tactics in the pre-hospital and early hospital periods. In recent years, among the surgical methods of treatment, a special place has been occupied by filling the wound cavity after cisectomy and cystotomy with osteoplastic material, as well as using autologous blood plasma.

The use of autoplasma in the jaw area helps to achieve the following results: accelerating the processes of osseointegration (engraftment) of bone tissues, reducing the risk of purulent-inflammatory complications, accelerating the rehabilitation period after surgery. Russian scientists d.m.s. R.R. Akhmerov and Ph.D. RF. In 2003, Zarudiy created an injectable form of platelet autoplasma. At the same time, the name of the technique was coined, special test tubes for the method were developed. These tubes make it possible to obtain plasma with a therapeutic content of platelets. The lower part of the tube is filled with adsorption gel, which, during centrifugation, adsorbs erythrocytes and low molecular weight fatty acids. The gel does not affect the properties of the plasma and allows you to get plasma of a high degree of purification, it well stabilizes the erythrocyte-leukocyte clot. To prevent blood clotting in the upper and middle parts of the tube, finely dispersed sodium heparin of a high degree of purification, approved for reverse injection of plasma, was applied to the walls. This anticoagulant is safe because sodium ions are part of the internal environment of the body, and heparin in the body is synthesized by mast cells [9,10].

Improving the methods of surgical treatment of odontogenic cysts at the top of the root of the teeth can lead to a significant reduction in indications for the removal of causative teeth. One of the solutions to this problem is the filling of residual cystic cavities with bone-plastic materials. Their active use presupposes that the osteoplastic material contributes to the restoration of small and large bone defects with the formation of bone corresponding to the anatomy of this area, in the optimal time frame, which shortens the postoperative rehabilitation period of patients and contributes to the early functional load of the organ. But the experience of clinical observations has shown the low effectiveness of some materials, especially with significant bone defects, since they are not always completely replaced by bone, but are encapsulated by connective tissue, maintain chronic inflammation, enhance bone resorption, or are partially rejected. [4]

Of particular importance is the choice of a treatment method that would use materials that meet modern requirements. Osteoplastic preparations should have such parameters as the absence of toxicity, bacterial and viral safety, complete biocompatibility, a combination of osteoconductive and osteoinductive properties. [5]

One of the directions in the restoration surgery of the jaw bone tissue is the use of autoplasma of blood, which has a combined reparative effect on hard and soft tissues due to the

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activated elements contained in it with growth factors. A feature of the use of osteogenesis optimization means is that they show their positive qualities at certain stages of bone restoration [3]. Therefore, the combined use of biocomposite osteoplastic materials and autoplasma of blood suggests the creation of optimal conditions for bone formation by reducing the inflammatory response of tissues and an effective effect on the mechanisms of ossification. [8]

The purpose of the study: to study the effectiveness of the use of an osteoplastic preparation for cysts at the root of the teeth in the maxillae using autoplasma of blood.

Materials and methods of research: We studied the results of 24 patients after removal of cysts at the top of the root on the top. The patients were treated in the Department of Maxillofacial Surgery of the Bukhara Multidisciplinary Medical Center, which is the clinical base of the Department of Surgical Dentistry of the State Medical Institute. The patients were aged 22 to 34 years, of which 19 were men and 5 were women. All patients, depending on the method of treatment, were divided into two groups: Group I - the control group (CG) included 12 patients, including 9 men and 3 women who received traditional treatment - cystectomy with resection of the root apex; Group II - the main group (MG) consisted of 12 patients, of which - 7 men and 5 women treated in a complex way. In MG patients after cystectomy, resection of the root apex was not performed, and the residual bone cavity was filled with osteoplastic material "EthOss" and autoplasma of the patient's own blood was injected into the wound area after cystectomy and cystotomy for 5 days.

Results and discussion of the study: In CG patients, in whom, after cystectomy with resection of the root apex, the residual bone cavity was filled with ordinary turunda with levomycal ointment, the bone tissue defect was eliminated within 43 days. In patients with MG in the postoperative period of the osteoplastic material "EthOss" and autoplasma of blood, a positive clinical effect was achieved already on the 30th day. Studies conducted in the Department of Maxillofacial Surgery of the Bukhara Multidisciplinary Medical Center, which is the clinical base of the Department of Surgical Dentistry of the State Medical Institute, clearly showed that the injection of blood plasma for at least 5 sessions into the fracture line led to a decrease in pain, to a subsidence of edema already during the first procedures. In view of the above, we investigated the effect of blood plasma in the treatment of odontogenic cysts of the jaw.

Clinical studies have shown that blood plasma has fibrinolytic, anti-inflammatory, anti-edematous activity. As a new and safe biological stimulant that acts on the entire regeneration chain and on all tissues at the same time. Such close interest in autoplasma is primarily due to the fact that platelets contain numerous growth factors and cytokines that promote the regeneration of damaged tissues. More than 30 growth factors were found in platelet alpha granules, which can influence the processes of restoration of all joint tissues simultaneously: bone, cartilage, ligamentous apparatus and muscles. Of these, the most important are: platelet growth factor (PGF) - stimulates chemotaxis, fibroblast mitogenesis, collagen synthesis; vascular endothelial growth factor (VEGF) - has a stimulating effect on endothelial cells; transforming growth factor. The method is based on the delivery of natural factors involved in the recovery processes of the body to the pathological zone. Platelet-rich mass (PRM) is an isolated fraction from the patient's blood, in which the content of platelets (cells that play a crucial role in the healing and regeneration of damaged tissues) is increased by 7-10 times. Platelets secrete growth factors into damaged tissues, which stimulate cell division and growth, thus starting the process of tissue regeneration. Growth

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factors are polypeptide (protein) molecules of various structures and purposes. Protein molecules play a central role in the process of tissue healing and regeneration and are the building blocks of damaged or inflammatory tissue in the body [6, 7].

This procedure is absolutely safe and does not cause allergic reactions, since the source of the biomaterial is the patient himself. This method is not associated with stem cell treatment, it is only a trigger mechanism for stimulating the work of the body's own cells.

Conclusions: Thus, for the first time in the clinic of maxillofacial surgery, it was scientifically substantiated the need to study the composition of the oral fluid in odontogenic jaw cysts, as well as to determine the indicators of peripheral circulation and metabolic processes as diagnostic and prognostic criteria for the course of the disease. The positive effect of autoplasma as part of the complex therapy of patients with odontogenic jaw cysts, which contributes to the prevention of their inflammatory complications, has been proven. The use of osteoplastic material "EthOss" and autoplasma of blood creates optimal conditions for bone formation by reducing the inflammatory response of bone tissue. In the practice of surgical dentistry, it will increase the effectiveness of the treatment of patients with cysts at the top of the teeth in the upper jaw and reduce the recovery time for bone defects in the jaw bones. The use of "EthOss" and autoplasma of blood for a bone defect after removal of cysts reduces the severity of postoperative soft tissue edema. After 6 months, mature bone tissue was determined in the postoperative bone defect.

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