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METHOD OF PLASTY OF THE LATERAL WALL OF THE MAXILLARY SINS IN SINUS LIFTING

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Abstract. *The study involved 18 patients with defects in the dentition and severe atrophy of the bone tissue of the upper jaws in the distal sections. For plasty of the lateral window of the maxillary sinus after sinus lift, a brefoxeno graft from the bone tissue of newborn lambs was prepared. The preoperative X-ray examination included CBCT, which made it possible to determine not only the geometric and density parameters of the bone tissue of the alveolar process and VChS, but also the condition of the sinus mucosa. The preserved xenobone was modeled with surgical scissors to a size that covered the window in the lateral wall of the maxillary sinus. According to micrographs, during densitometry, the restoration of bone tissue fibers was assessed. Analysis and comparison of micrograph data on the 30th, 90th and 180th days after the operation showed signs of bone tissue regeneration in the defect zone, which is confirmed by an increase in mineral density (by 0.193; 0.099; 0.086 g/cm3).*

Keywords*. sinus lift, bone defect, demineralized lamb bone, graft.*

МЕТОД ПЛАСТИКИ ЛАТЕРАЛЬНОЙ СТЕНКИ ГАЙМОРОВОЙ ПАЗУХИ ПРИ ОПЕРАЦИИ СИНУС- ЛИФТИНГ

Аннотация. *К исследованию были привлечены 18 пациентов с дефектами зубных рядов и выраженной атрофией костной ткани верхней челюстей в дистальных отделах. Для пластики латерального окна гайморовой пазухи после синуслифтинга заготовлен брефоксено-трансплантат из костной ткани новорожденных ягнят. Предоперационное рентгенологическое обследование включало КЛКТ, которое позволяло определить не только геометрические и плотностные параметры костной ткани альвеолярного отростка и ВЧС, но и состояние слизистой оболочки пазухи. Консервированную ксенокость хирургическими ножницами моделировали до размеров перекрывающих окно в латеральной стенке гайморовой пазухи. По микрофотографиям, при денситометрии проводили оценку восстановительния волокон костной ткани. Анализ и сравнение данных микрофотографии на 30, 90 и 180-е сутки после операции отмечаются признаки регенерации костной ткани в зоне дефекта, что подтверждается увеличением минеральной плотности (на 0,193; 0,099; 0,086 г/см3).*

Ключевые слова. *синуслифтинг, дефект кости, деминерализованная кость ягненка, трансплантат.*

INTRODUCTION.

Dental rehabilitation of patients with dentition defects by dental implantation has become a common method of treatment in recent decades. When planning a sinusliftin operation, one often has to face various problems (T.G.Robustova, 2003; Daminov R.O., 2011; Starostina A.E., 2016; Pivovarov N.A., 2018; Amkhadova M.A. et al., 2019) that limit surgeons.

Unfortunately, the operation, which is simple according to the method of execution, is very traumatic, causes a fairly large number of complications in the postoperative period: from a

recurrence of sinusitis to scarring of the cheek mucosa with the formation of scars growing into the sinus due to the non-healing of a bone defect on the lateral wall of the sinus. Currently, there are many techniques for plasticizing defects on the lateral wall of the HPV. For the last two scientific and practical interest in this problem has not weakened for decades. The search continues for low-traumatic surgical techniques, as well as materials for eliminating bone defects in both radical sinusotomy and sinus lifting. One of the main disadvantages of the operation – traumatic and extensive destruction of the anterior-outer wall of the ESF – is the cause of the formation of mucous cords, which subsequently grow through the sinus defect and together with the scars form domed retractions in the sinus, leading to relapses of chronic maxillary sinusitis (Yaremenko A.I., 2015; Lee K.C., 2010). The bone defect after radical sinusotomy, as well as during sinus-lifting, does not regenerate, maintaining a sufficiently large diameter – up to 3 mm, sometimes up to 5 mm, through which the membrane of the HPV is scar-soldered to the tissues of the cheek and the under-eye area, forming retracted scars. At the same time, in addition to reducing the depth of the vestibule of the mouth, the symmetry of the face is violated, patients complain of functional and cosmetic inconveniences associated with the retraction of the cheek mucosa, and often pain in the soft tissues on the side of the operation. Complications reach about 80% (Chergestov Yu.I. et al., 2016; Magomedov M.M., Zeynalova D.F., Magomedova N.M., 2016). To eliminate the above complications, various methods of plasticizing trepanation holes have been proposed (Harutyunyan K.E., 2005; Petukhova P.V., 2004; Privalov S.Yu., 2008). There are a number of methods for plasticizing postoperative defects of the anterior-outer walls of the ESF using auto- and allografts, corundum ceramics and carbon materials, implants made of porous titanium nickelide, biopolymers, autostructures and others (Krut S.M., 1982; Migura S.A., 2010, Gazhva Yu.V., 2014). Shulman F.I. (2003) in her publications described the method of closing the defect with a free bone graft. Other authors suggested using cartilage (Mattioli R., Romani U., Dallari S., 1984), a lyophilized dura mater, which, in their opinion, is replaced by connective tissue over time, to repair a defect on the lateral wall of the HPV. However, subsequent scientific studies have shown that the use of allografts has a significant drawback: being deprived of the mucous membrane from the sinus, they are not protected from infection and are unreliable in terms of the development of inflammatory processes in the postoperative period.

Thus, at present, the process of searching and developing high-quality materials with high mechanical characteristics and not requiring subsequent removal remains very relevant. Based on this, the demineralized bone of the lamb is of interest. An analysis of the scientific literature on this issue did not reveal a consensus on the plastic of the lateral window during sinus lifting, which was the reason for this study.

The purpose of the study: to develop an effective technique for plasticizing the lateral window of the ESF during sinuslift surgery.

MATERIALS AND METHODS OF RESEARCH

The study involved 18 patients with dentition defects and pronounced jaw bone atrophy in the distal parts of the upper jaw, of which: men - 8 (44.4%), women – 10 (55.6%). All patients (n=18) underwent a standard clinical and laboratory examination.

For plastic surgery of the lateral window of the maxillary sinus after sinus lifting, we prepared a brefoxeno-graft from the bone tissue of newborn lambs, demineralized by the method

of V.I.Savelyev and preserved by the method of V.F.Parfentieva. The preparation of the graft was carried out from the flat and tubular bones of newborn lambs of Karakul sheep in the first 5 days from the moment of birth. The simplicity of harvesting demineralized lamb bone in non-sterile conditions, an unlimited amount of raw materials, gives access to use by a wide range of practitioners.

Preoperative X-ray examination included CBCT, which made it possible to determine not only the geometric and density parameters of the bone tissue of the alveolar process and the ESP, but also the condition of the sinus mucosa. During the diagnostic endoscopic examination, edema, hyperemia of the mucous membrane, the presence of pathological discharge in the OMC area were detected in 23 (56%) patients. In patients who have previously undergone radical sinusotomy, there is a technical difficulty in carrying out sinus lifting, To prevent such postoperative complications, we have developed and proposed a method of plastic sinusotomy using xenocity and pins. The preserved xenocity was modeled with surgical scissors to the size of the overlapping window in the lateral wall of the maxillary sinus. Usually, a demineralized compact lambs skull plate with a thickness of 1.5 - 2 mm was used. The graft was carefully transferred to the defect site and fixed with pins. The detached muco-periosteal membrane was sutured with vicryl No. 4.

RESEARCH RESULTS

According to micrographs, densitometry was used to assess the restoration of bone tissue fibers. Analysis and comparison of micrography data on the 30th, 90th and 180th days after surgery, there are signs of bone regeneration in the defect area, which is confirmed by an increase in mineral density (by 0.193; 0.086; 0.099 g/cm3), When using xenocity and pins, islands of newly formed young are visualized over the defect area starting from 60 days bone tissue and fully formed bone tissue is visualized by 90 days. When using xenocity and pins, after 3 months there is a complete replacement of the bone defect with osteoid tissue with the formation of bone beams located randomly and anastomose with each other. Osteocytes are detected on the surface of osteoid beams. In the area of the formed bone tissue, the processes of bone tissue structuring from the edges of the defect to the center are observed. After 180 days in this study group, the presence of fully formed bone beams arranged in an orderly manner is noted in the defect zone. All bone structures are formed correctly, well differentiated. Thus, the osteogenesis process occurs most intensively in the main group and is fully completed by 6 months with the formation of mature bone tissue. Based on the conducted research.

CONCULISION

The results of clinical studies allow us to assert that an important component in terms of prevention of postoperative complications is plastic surgery of a postoperative defect on the lateral wall of the MS. The use of xenocity and pins to accelerate bone regeneration in accordance with the principles of directed tissue regeneration has now become possible to eliminate lateral bone defects of the maxillary sinus wall during sinus lifting. Xenocost slowly dissolves in the human body, no repeated surgery is required to remove the latter. According to the data obtained, sinuslift using xenocity and pins to close the lateral window seems to us to be the optimal method. In addition to ease of use, the method is distinguished by the duration of the period of material resorption, stability of fixation, plasticity, and the absence of toxic effects on the body.

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