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HEALING WITH THE USE OF TITANIUM THREADS OF CONTROLLED BONE RESORPTION

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ANNOTATION:
In this work, a comparative assessment of postoperative healing and the state after treatment with non-absorbable titanium threads and a resorbable collagen membrane after controlled bone resorption was carried out. Under observation were 50 patients who applied to the private clinic "Dr. Ilkhom" in Samarkand about the need for orthopedic treatment. Depending on the method of treatment, they were divided into 2 groups. Operations were performed on both the upper and lower jaws. At the same time, regenerative intervention was carried out in combination with an open sinus lift procedure. The length of the defects ranged from one to five missing teeth. When analyzing the healing of soft tissues in members of both groups in the early postoperative period, according to the ECI index, the indicators of the first group were 1.6±0.86 points, and the second group - 1.76±1.1 points.

Keywords: controlled bone resorption (CBR), titanium threads, collagen membrane, orthopantomography (OPTG), attached, keratinized gingiva.

INTRODUCTION

Rehabilitation of patients with injuries caused by teeth extraction, inflammatory process in bone tissue, severe atrophy of bone tissue caused by long-term walking without replacement of extracted teeth is considered an urgent problem. One of the most important issues is the choice of the optimal method of bone plastic surgery, which is considered necessary for patients belonging to this category. Modern regenerative surgery has a number of techniques aimed at restoring the lost volume of jaw bone tissue. These include autotransplantation of bone blocks, controlled tissue regeneration (membrane technique), distraction osteogenesis, and others. Each of the above-mentioned methods has its own advantages and disadvantages.

The main causes of alveolar bone atrophy are associated with tooth extraction and the subsequent decrease in functional load. It was determined that the decrease in the amount of bone tissue is primarily caused by the destruction of cancellous bone and Sharpeev fibers. The tufted bone is a component of the alveolar bone, which is directly adjacent to the

periodontal space where the fibers of the periodontal ligaments are attached. The cancellous bone is a dependent structure of the tooth and rapidly regresses after tooth extraction, forming first horizontal and then vertical bone defects, ultimately and in a very short time, causing changes in the gingival contour. Since these tissues are mainly in the vestibular wall of the tooth cells, the destruction of bone tissue is clearly visible in these areas [2, 8]. A number of studies have shown that, depending on the biotype of the gums and the thickness of the alveolar wall (this wall thickness is at most 1 mm in most cases and is resorbed in almost 100% of cases after tooth extraction), the resorption is more pronounced in individuals with thick gums than in individuals with thick gums. showed that it was more pronounced in patients with a maximum of 1 mm [13, 18].

Based on this, today, in order to create the possibility of installing dental implants in the rehabilitation of patients diagnosed with adentia, it is still relevant to choose scientifically based tactics to restore the volume of lost bone tissue.

During the last decades, in particular, the method of controlled bone regeneration has been actively studied. In particular, surgical techniques are being improved, and many osteoplastic materials and membranes are being created, which have the ability to stimulate the process of bone formation or serve as a matrix in the elimination of bone defects.

Purpose of Work:

Comparative assessment of postoperative healing and condition after treatment with non-absorbable titanium threads after controlled bone resorption (CBR).

Material and Methods

From 2019 to 2022, 50 patients who applied to the private clinic "Dr. Ilkhom" in Samarkand for the need of orthopedic treatment were observed. The age group of patients was from 20 to 66 years, 21 of them were men (42%), 29 were women (58%). During the initial clinical and X-ray examinations, secondary partial adentity of the upper and lower jaws was complicated by alveolar bone atrophy in all 50 patients, and it was necessary to undergo bone plastic surgery before placing dental implants. All patients were divided into two study groups according to suture material. The first group consisted of 25 patients and underwent bone regeneration using a mesh based on titanium threads. The second group consisted of 25 patients who underwent controlled bone regeneration using collagen membranes. The groups were divided into subgroups according to the principle of random allocation (randomization). During the study, the results obtained using two types of membranes were comparatively analyzed.

During the study, clinical and laboratory analyzes were carried out according to the standard, clinical evaluation measures of early healing of wounds were carried out five days after the surgical intervention using the Early Wound Healing Index (EHI). During the operation, alveolar bone "thickness" and "height" were determined using an osteometer, barbell circle and periodontological probe. The indicators were recorded before the surgical operation and at the stage of implant installation. Morita orthopantomography (Morita,

Japan) was used to evaluate the dental alveolar complex and orthopantomography (OPTG) was performed according to the standard protocol. OPTG was performed as an adjunct to CT during the initial consultation and post-operatively to determine the position of the implants and the position of the surrounding bone.

Data were statistically analyzed using SPSS Statistica 10.0 (Chicago, SA) and MS Excel 2013 (15) programs on a computer. Since the quantitative samples of the studies did not obey the normal laws of distribution, the comparative analysis of the data of both groups was carried out based on non-parametric criteria of Mann-Whitney (value of statistically significant differences $p>0.05$).

Results

According to the results of clinical and laboratory examinations, no side effects were detected in any patient that would not allow the surgical operation to increase the volume of bone tissue and then the installation of intraosseous dental implants. In cases of chronic diseases, patients were referred to appropriate specialists and certain treatment procedures were carried out.

Oral hygiene index (OHI) was evaluated on the eve of the operation. The average score in the first group was 2.2±0.3, and in the second group it was 2.3±0.5, which corresponds to a good and satisfactory level of oral hygiene. will come. All patients underwent professional oral hygiene before bone plastic surgery. During the operation, the thickness of the soft tissues was assessed based on the method proposed by Tomas Linkevičius. This method is based on the evaluation of the height of the soft tissues of the intact tongue using a periodontological probe after making a horizontal cut and separating the vestibular incisors, thereby differentiating the thin, medium and thick biotypes of the gum. In most representatives of the first and second groups (14 and 13 people, respectively), the average biotype of the gum was determined, which corresponds to 2-3 mm. Thin biotype (2 mm) was noted in 7 cases in the first group, and in 6 cases in the second group, while 4 patients in the first group and 6 patients in the second group had a thick biotype (greater than 3 mm).

In most cases, the width of the attached, keratinized gingival zone after the operation was 0-1 mm in groups I and II, in 64% and 56% of cases, respectively, which made it necessary to carry out soft tissue plastic to form the optimal level of CBR.

25 patients (15 women, 10 men) underwent controlled bone regeneration using non-absorbable mesh "Titan silk" based on titanium threads. The horizontal lack of bone tissue served as the basis for inclusion in the operation group. However, in two cases, this method was used in a patient with a defect located within the bone and with a vertical bone deficiency.

Surgery was performed on both the upper and lower jaw. In most cases, CBR was performed on the lateral part of the mandible with defects identified at the end of the mandible, in two cases on the frontal part of the maxilla, and in two cases on the lateral part of the maxilla. At the same time, the regenerative intervention was carried out in harmony with the open sinus-lifting procedure. The length of the defects ranged from one to five missing teeth.

A total of 58 dental implants were installed in this group. The diameter of the implants was 3.5-4.5 mm, and the length was 8-13 mm. All implants were inserted into the support of temporary and final prostheses. After one year, dispensary examinations and X-ray control showed that the viability of the implants was 100%. Only 24.1% of the implanted implants showed early signs of alveolar bone resorption around the neck (maximum loss of 0.5 mm). In one clinical case (one implant) (1.7%) obvious resorption of bone tissue was detected, and the reason for this was explained by unsatisfactory hygiene of the patient. The obtained data indicate that the method of controlled bone regeneration performed using the "Titan silk" mesh based on titanium threads is effective as a way to restore bone tissue indicators before dental implantation.

25 patients (14 women, 11 men) underwent controlled bone regeneration using collagen membranes. The average age of the research participants is 46.9±6.5. Patients were included in the group according to the criteria of horizontal deficiency of alveolar bone. Surgery was performed on both the upper and lower jaw. In the majority of cases (15 patients), CBR was in the lateral part of the lower jaw, in clarified final defects, in three cases in the frontal part of the upper jaw, in four cases in the lateral part of the upper jaw (in two cases regenerative intervention was open sinus - carried out together with the lifting procedure), in three cases it was performed in the anterior part of the lower jaw. Defect distances ranged from one to five missing teeth.

On the fifth day of surgical intervention, early wound healing was objectively evaluated according to the EHI (Early Wound Healing Index) index. In most cases - 24 patients of the first group and 22 patients of the second group - healing of the wound due to primary traction was noted. In two patients of the second group, it was found that the edges of the wound were partially opened, while the necrosis of the edges of the incision was not observed, and the presence of exudation due to infection was known. The termination was noted to be accompanied by secondary traction, pain, and significant swelling. In both cases, spontaneous healing of the soft tissues occurred after 10-14 days and did not affect the final result of the subsequent treatment. In one patient of the first and second groups, purulent discharge and necrotization of the wound edges were observed. At the same time, purulent discharge with severe pain and swelling was noted from the wounds and adjacent tooth molars. In these clinical situations, the membrane mesh and the infected bone plastic material were immediately removed, antiseptic treatment was performed, and the wounds were sutured repeatedly.

Thus, based on the results of clinical and radiological studies, it can be concluded that both methods of controlled bone regeneration using titanium mesh and collagen membrane ensure the formation of full-fledged bone regenerate rich in small blood vessels. However, in the second study group, the cone-beam computed tomography analysis showed apical resorption of the regenerate over time (after the collagen membrane was completely biologically absorbed) under the influence of masticatory pressure and muscle fiber tension. . In the first group, such cases were rarely observed because the titanium mesh was non-absorbable and performed well as a framework. That is why, compared to the second group

(3±1.3mm), the first group showed a large increase in width indicators (4.2±1.2mm) (the measurement was taken from the peak of the alveolar edge of the reconstruction area).

Conclusion

When analyzing the healing of the soft tissues of the members of both groups in the early postoperative period, according to the EHI index, the indicators of the first group were 1.6±0.86 points, and those of the second group were 1.76±1.1 organized the score. In the later stages of the finishing process, one case of membrane exposure was detected in the first group (4%). No complications were observed in the second group. In both groups, the indicator of a significant decrease in the level of CBR under the influence of tissue mobilization after reconstruction surgery gained statistical significance.

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