

STUDY OF THE MORPHOLOGICAL PICTURE IN DENTAL IMPLANTATION

Turopov Feruz Ruzikul ugli
Ziyodullaev Khondamir Khurshid ugli
Sultanov Fayoz Mamasoli ugli

Scientific supervisor: **PhD Abdullaev Afzal Sarkhadovich**
Department of Maxillofacial Surgery and Dental Implantology,
Samarkand State Medical University
<https://doi.org/10.5281/zenodo.10679675>

ARTICLE INFO

Qabul qilindi: 15-fevral 2024 yil
Ma'qullandi: 17-fevral 2024 yil
Nashr qilindi: 19-fevral 2024 yil

KEY WORDS

dental implantation, titanium threads, morphological imaging, atrophy.

ABSTRACT

The article provides data on morphological study of biopsy samples during dental implantation using screws and titanium threads. Dental implantation was performed using threads where titanium could be absorbed.

Modern dentistry does not stand in one place. Dental implantation is now broadly entering our lives. It is also worth noting that the speed of the processes of remodeling the upper jaw alveolar bone is 1/4 of the lower jaw speed [9, 13]. The resulting embryo was allowed to develop in nutrients and then inserted into her womb, where it implanted [7].

The etiology of residual alveolar edge resorption is recognized as multi-factor, and it is seen as a collection of anatomical, functional, metabolic determinants, prosthesis factors [9, 15]. Today, it is not known which of these factors contributes more to the process of bone remodeling, but special attention is paid to such ones as the amount and quality of the residual edge bones, the type of person's face, the hormonal and metabolic condition of the body, dental microflora, gnathological factors, harmful habits, and the patient's prosthetic anemia [2, 6, 8, 16, 18].

To serve successfully, the implant must distribute the load of chewing gum equally to the base tissues of the mouth cavity and maintain their functioning according to normal requirements, not creating morphological changes in bone tissue [3]. In this context, having enough of the alveolar bone in place of implantation is the most important factor in the long-term progression of osteointegrated implants [11].

Modern regenerative surgery has a number of technical methods of the jaw aimed at restoring lost bone tissue. These are the secrets of breakdown of the alveolar edge, autotransplantation of bone blocks, controlled bone regeneration, bone regeneration carried out using unforgettable cells, distraction osteogenesis, sinus-lifting, and other technologies [11]. Each method has its advantages and disadvantages. On the other hand, the condition of the jaw alveolar sheet does not always allow bone marrow implants to be planned based on standard protocols. As a result, the relevance of choosing scientific-based tactics will be of greater importance in restoring lost bone tissue, relying on patient characteristics and doctor's qualifications [15].

Failure to adequately evaluate the factor of bone tissue deficiency, conducting detailed analysis, misrepresenting the information of diagnostic tests creates a number of problems that continue to cover each other like snowflakes, setting the stage for the emergence of complications that can lead to the loss of various implants after implantation [5].

Of course, choosing a reasonable reconstruction technique requires taking into account other factors in addition to bone condition. This is a toothless intermediate condition, the size of the area covered with existing soft tissues, the systematic condition of the patient, and, naturally, the qualifications of the doctor who conducts this operation, and the method he prefers [1, 165]. Nevertheless, the factor of bone deficiency is decisive and the duration of the implant's service, which directly affects its stability.

Research materials and methods. From 2019 to 2022, 50 patients were examined at the Dr. Ilkhom private clinic in Samarkand with the diagnosis K08.1—"Loss of teeth as a result of an accident, bite, or local periodontal disease," K 08.2.—"Toothless alveolar edge atrophy." Patients sought medical care—the need for reasonable orthopedic treatment.

The age category of patients is between the ages of 20 and 66, 21 of them are men (42%), 29 are women (58%). All patients were considered almost healthy or had chronic diseases during the remission period.

During initial clinical and rheumatological tests, it was found that all 50 patients had asthma with alveolar bone atrophy, a secondary partial adentia of the upper and lower jaw, and the need for bone plastic surgery was born before putting in dental implants. All patients were distributed to two research groups. In 25 patients, bone regeneration was performed using a net based on titanium threads.

Post-operative observations were planned to be carried out 6 and 12 months after surgical intervention. Clinical studies included:

- request (aesthetic aspects expected to be achieved through treatment), facial exterior (determining whether there are deformations, determining the type of laughter, changes in the height of the lower quarter of the face);
- Evaluate the condition of teeth and tooth lines (determine whether there is damage to caries, parodontic condition, accumulation milk level, whether there are crops in the mucous membrane and state, mobility of existing teeth, type of prikus);
- determine the width (relay) of the jaw alveolar department by noticing the width (relay) of the jaw alveolar department in order to identify defects in the area where bone tissue or acute edge implantation is planned;
- determine the distance between alveoliars and teeth for implant installation and reasonable prosthesis;
- Control the level of oral hygiene using instruments, visually and as needed.

Laboratory diagnostics consisted of studying the level of blood general and biochemical analysis, glucose, hemosyndromes, hepatitis A, B and C types, zahm, HIV, and S-reactive protein as an indicator of inflammatory and destructive processes; immunological status was also assessed if there were allergic reactions in the mother's womb.

An orthopaedics of Morita (Morita, Japan) was used to evaluate the dental alveolar complex and, according to the standard protocol, orthopantomography (OPTG) was performed. Optg was performed as an addition to CT screening at the primary consultation stage, as well as to determine the location of implants and the state of the bones surrounding them at the post-operative stage (Fig. 1).

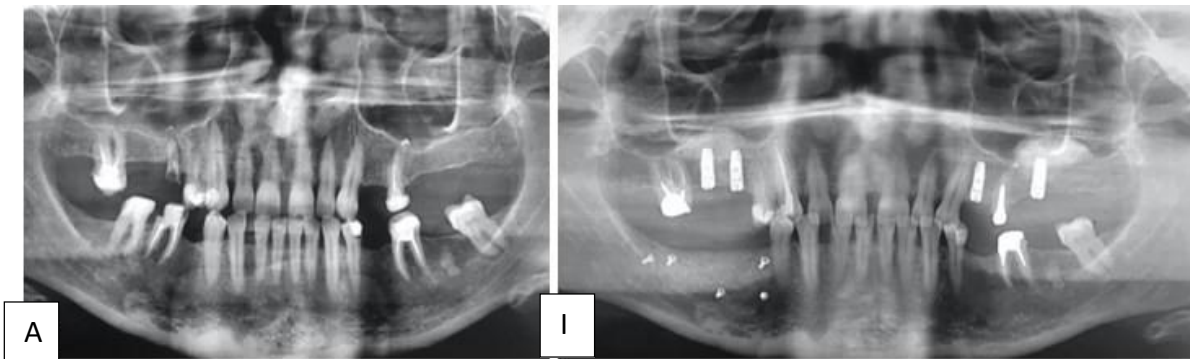


Figure 1. a – OPTG conducted during primary examination in order to develop a treatment plan; b – OPTG examination of the post-BSR surgical treatment phase.

A histological study was carried out six months after bone plastic surgery to assess the quality of the regenerate obtained. During the implant installation phase, a sample of tissues shaped in the shape of 3.5 mm columns was collected using trepan in the formation of the thylinder. Column biopath was thought to be in a 10% solution of neutral formalin for 3 days, decalcification by 14 milk with Trilon B salt, and alcohol was put into paraffin after dehydration in the heliol gradient. Then cutters were made at a thickness of 5-7 cm. The cuts were painted with blue annilin (Biovitrum, Russia) on hematoxin, eosin and Masson.

Results. All patients had professional hygiene activities of the oral cavity before bone plastic surgery. During the operation, the soft tissue thickness was assessed, relying on the style proposed by Thomas Linkyavichyus. This method is built on the basis of evaluating the height of the soft tissues of the incath language (Figure 2) using a parodontological probe after the horizontal incision and the vestibular cylinder is separated, thereby differentiating the thin, medium, and thick biotours of milk. In most patients (14 individuals), the average bioturium of milk was detected, which corresponds to 2-3 mm. In 7 cases, a thin biotur (2 mm) was recorded, while 4 patients observed a thick bioturium of milk (larger than 3 mm).

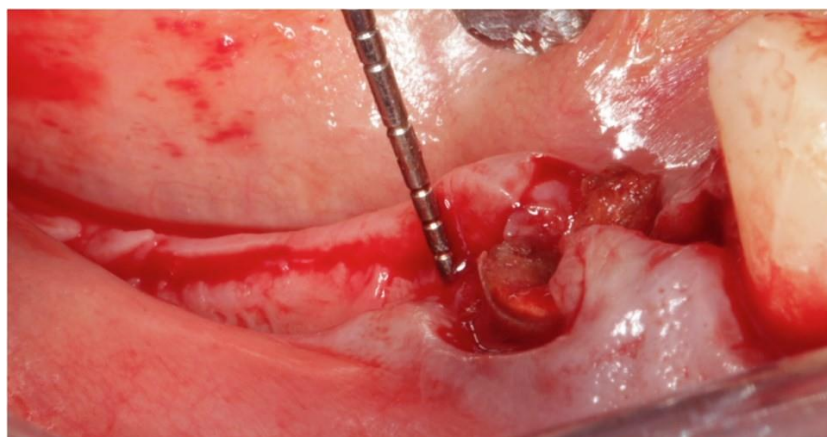


Figure 2. With the help of a parodontological probe, the thickness of the soft tissue on the edge of the alveolar bone is measured.

This indicator was of decisive importance and stipulated a decision to partially or fully retain the net in the wound. A year later, dispensary tests and x-ray control showed that the survival of implants was 100%. Only 24,1% of implants installed were observed to have early signs of alveolar bone resorption around the neck (0.5 mm with most of the loss). In one clinical case (one implant) (1.7%), a pronounced resorption of bone tissue was detected and the reason was explained by the fact that the patient's hygiene was unsatisfactory. The data obtained demonstrates that the controlled bone regeneration method, which is performed using the titanium thread-based net, is effective as a way to restore bone tissue indicators before dental implantation.

Histological examination of bioplates taken six months after the end of the BSR wound, which was made of Titanic threads, was conducted using unspeakable Titan Silk, found that the bioplate content consisted of five main structural elements. Newly formed and main bone tissue, bio-Oss bone plastic material residues, connective tissue, as well as dystrophic calcinosis fragments entered (Fig. 3).

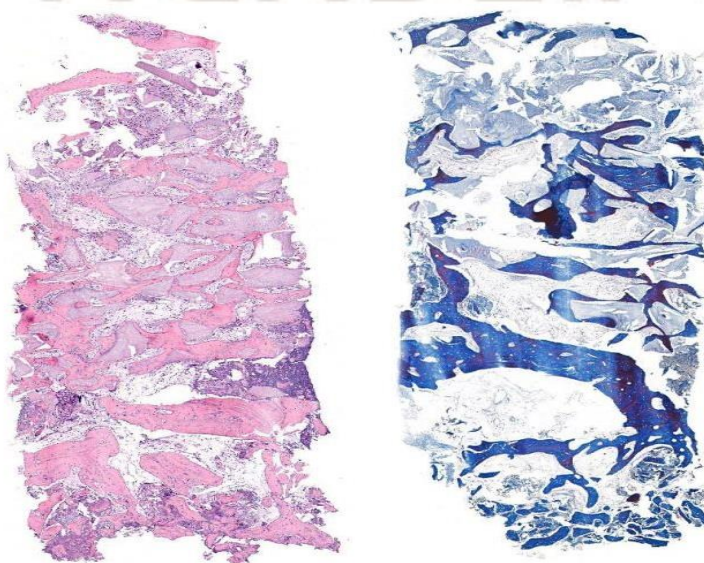


Figure 3. An overview of the column bioplate when painted with GE (left) and blue annilin (right) by Masson

Bio-Oss bone plastic material pellets are surrounded by newly formed bone and connective tissue (Fig. 90). In the area of communication between connective tissue of bio-Oss granules, giant cells of a bed body were identified along the periphery of the material. The composition of the connective tissue is diverse and becomes dense towards the top of the column biopsy and manifests itself in the form of scar tissue. In the center of the material, the structure of the connective tissue was vacant and was observed to be rich in small vessels and capillaries. In addition to fibroblasts, plasmocyte, monocytes, and lymphocytes were detected in the connective tissue. The largest of them was observed in the peripheral area of the bioplate, near the dystrophic calcinosis field. At the bottom of the bioplate was noted the main bone, in the form of bone tissue with compact plates, forming osteon.

Almost the entire space is considered the main component of the bioplate, covered with reformed bone tissue. The newly formed bone tissue surrounded the granules of the bone plastic material, manifesting itself as young layered bone tissue, and it formed osteon around the most concentrated areas. Bio-Oss bone plasticity material was observed to grow new bone tissue in the resertabsed areas. This was reflected in the fact that the process of conversion of the material with private bone tissue was taking place.

Conclusion. According to the results obtained, wound completion was mostly observed with primary gravity, lack of signs of inflammation (1,2,3 index), which accounted for 96% of the total. Only 4% reported the separation of the scar and the formation of inflammation. Analysis of the complications found that the main role was played by insufficient size of the attached keratinated mucous membrane (less than 2 mm), thinness of the tissue biotur, and a number of other technical errors.

References:

1. Al-Rafee, M.A. The epidemiology of edentulism and the associated factors: A literature Review / M.A. Al-Rafee // J. Fam. Med. Prim. Care. – 2020. – Vol. 9, № 4. – P. 1841.
2. Atrophy of the residual alveolar ridge following tooth loss in an historical population/ K.M. Reich et al. // Oral Dis. – 2011. – Vol. 17, № 1. – P. 33–44.
3. Autogenous bone grafts in oral implantology—is it still a “gold standard”? A consecutive review of 279 patients with 456 clinical procedures/ A.Sakkas et al. // Int. J. Implant Dent. – 2017. – Vol. 3. – R. 23–35.
4. Barrier membranes for dental applications: A review and sweet advancement in membrane developments [Elektronn y resurs] / R. Ia et al. // Mouth Teeth. – 2018. – Vol. 2, № 1.
5. Botticelli, D. Hard-tissue alterations following immediate implant placement in extraction sites/ D.Botticelli, T.Berglundh, J.Lindhe // J. Clin. Periodontol. — 2004. — Vol. 31. — P. 820–828.

6. Cho YD, Namgung DJ, Kim KH, Kim S, Seol YJ, Lee YM, Ku Y. Long-Term Human Histologic Evaluation of Sinus Bone Augmentation and Simultaneous Implant Placement. *Int J Periodontics Restorative Dent.* 2022 Jan-Feb;42(1):93-100. doi: 10.11607/prd.4965. PMID: 35060973.
7. Clementini M, Morlupi A, Canullo L, Agrestini C, Barlattani A. Success rate of dental implants inserted in horizontal and vertical guided bone regenerated areas: a systematic review. *Int J Oral Maxillofac Surg.* 2012 Jul;41(7):847-52. doi: 10.1016/j.ijom.2012.03.016. Epub 2012 Apr 26. PMID: 22542079.
8. Custom-made titanium devices as membranes for bone augmentation in implant treatment: Modeling accuracy of titanium products constructed with selective laser melting/ N.Otawa et al. // *J. Cranio-Maxillofac. Surg.* – 2015. – Vol. 43, № 7. – P. 1289–1295.
9. Horizontal Ridge Augmentation using GBR with a Native Collagen Membrane and 1:1 Ratio of Particulated Xenograft and Autologous Bone: A 1- Year Prospective Clinical Study/ S.M. Meloni et al. // *Clin. Implant Dent. Relat. Res.* – 2017. – Vol. 19, № 1. – P. 38–45.
10. Rizaev E. A. et al. OPTIMIZATION OF GUIDED BONE REGENERATION IN CONDITIONS OF JAW BONE ATROPHY // *Applied Information Aspects of Medicine (Prikladnye informacionnye aspekty mediciny).* – 2022. – Т. 25. – №. 4. – С. 4-8.
11. Vertical ridge augmentation with guided bone regeneration in association with dental implants: an experimental study in dogs/ M. Simion et al. // *Clin. Oral Implants Res.* – 2007. – Vol. 18, № 1. – P. 86–94.
12. Shopulotova Z. A., Zubaydilloeva Z. K. THE VALUE OF ULTRASOUND DIAGNOSTICS IN PREGNANT WOMEN WITH CHRONIC PYELONEPHRITIS // *Бюллетень студентов нового Узбекистана.* – 2023. – Т. 1. – №. 9. – С. 19-22.
13. Абдувакилов Ж. У., Ризаев Ж. А. Особенности течения воспалительных заболеваний пародонта при метаболическом синдроме // *Вісник проблем біології і медицини.* – 2018. – Т. 1. – №. 2 (144). – С. 353-355.
14. Бузрукзода Ж., Ахтамов Ш., Щербакова Ф. Анализ гендерных различий строения челюстей жителей города самарканда по данным конусно-лучевой компьютерной томографии // *Медицина и инновации.* – 2021. – Т. 1. – №. 4. – С. 238-241.
15. Бузрукзода Ж. Д. и др. УСТРАНЕНИЕ ПЕРФОРАЦИИ ДНА ВЕРХНЕЧЕЛЮСТНОГО СИНУСА С ПРИМЕНЕНИЕМ ОСТЕОПЛАСТИЧЕСКОГО МАТЕРИАЛА // *Интернаука.* – 2021. – №. 7-1. – С. 25-27.
16. Мирзоев Ф. Р. и др. КОМПЬЮТЕРНАЯ ТОМОГРАФИЯ В ДИАГНОСТИКЕ РЕАБИЛИТАЦИИ ПАЦИЕНТОВ С ДИСФУНКЦИЕЙ ВИСОЧНО-НИЖНЕЧЕЛЮСТНОГО СУСТАВА, АССОЦИИРОВАННОЙ С ПЕРЕЛОМОН НИЖНЕЙ ЧЕЛЮСТИ В ОБЛАСТИ СУСТАВНОГО ОТРОСТКА // *VOLGAMEDSCIENCE.* – 2021. – С. 745-747.
17. Ризаев Ж., Кубаев А., Бузрукзода Ж. Современный подход к комплексной реабилитации пациентов с приобретенными дефектами верхней челюсти (обзор литературы) // *Журнал стоматологии и краниофациальных исследований.* – 2021. – Т. 2. – №. 3. – С. 77-83.

18. Шавкатов П. Х. и др. Пути повышения эффективности комплексного лечения при переломах нижней челюсти с применением препарата пентаглобина //VOLGAMEDSCIENCE. – 2021. – С. 754-756.
19. Abdumuminovna S. Z., Khamzaevna K. Z., Asliddinovich S. S. INFLUENCE OF PREECLAMPSIA ON SOMATIC DISEASES //Science and Innovation. – 2023. – Т. 2. – №. 12. – С. 778-780.
20. Rakhimovna K. D., Abdumuminovna S. Z. The role of staphylococcal infection in the structure of inflammatory diseases. – 2022.

