

EXPERIENCE OF EXPERIMENTAL APPLICATION OF RATIONAL DESIGN OF DOMESTIC DENTAL IMPLANT

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ABSTRACT

The team of the Department of Hospital and Faculty Orthopedic Dentistry of the Tashkent State Dental Institute has created a domestic dental implant. Dental implant "Implant.uz" is made in two-stage and one-stage form. Implementation of the implant in one-stage and two-stage forms expands the range of implantation means, depending on the medical indications and the patient's wishes. Microscopic examination of the jaw bone tissue at 1, 3, 6 months after implantation at the implant-bone interface showed that the bone tissue adheres tightly to the metal surface of the implants, no foreign inclusions, overlays and cavities are detected in the contact zones.

Keywords: domestic implant; installation of a dental implant; mucous membrane when using the implant; blood counts.

INTRODUCTION

Over the past few decades, dental implantology has been an effective solution for restoring both tooth loss and aesthetics as well as masticatory function in patients with partial and total adentia [2,5,12]. In a number of cases, conditions arise in which traditional prosthetic techniques cannot be applied, and the use of various dental implant options can be an effective solution for restoring masticatory function, aesthetic appearance and psycho-emotional well-being in patients [1,3,9,11].

In Uzbekistan, there has been no scientific development in this direction so far. [4,5,6,7]. Foreign dental implants of such manufacturers as Dentium (South Korea), AlfaBio (Israel), Konmet (Russia) are widely used in the practice of dentists of the republic. Despite the fact that "prosthetics on dental implants provides a number of advantages compared to removable prosthetics, the cost of this treatment remains high" [7,8,10]. Unfortunately, due to the high cost, not all patients with indications for dental implants can afford them. These circumstances prompted the present study.

Purpose of the study: to carry out a histo-morphological study of a native dental implant in experiment.

Materials and methods of research: We used engineering, experimental, histo - morphological and statistical methods to solve the set tasks

reception opening for the neck of the superstructure, passing into the central threaded hole for the screw that connects the intraosseous part to the superstructure. The execution of anti-rotation notches in the form of cross-shaped grooves (Fig. 3) provides increased reliability of the implant fixation by increasing the inhibition of intraosseous rotation, as the sprouted bone tissue in the form of cross-shaped ribs is a more rigid structure as compared to the round shape of the sprouted bone tissue in the closest analogue.



Figure : Cross-grooved anti-rotation notches at the apical end of the intraosseous implant

When using the proposed shape of the anti-rotation indentations, bone regrowth proceeds faster and without complications due to the smaller volume of the indentations.

The intraosseous apical incision with a 1 mm pitch ensures an even load on the bone and is favourable for the bone, which also has a favourable effect on the reliability of the implant fixation in the bone. The execution of the horizontal notches on the crown part increases the convenience of use in orthopaedic manipulations, the need for a second surgical intervention to remove the plug and insert the shaper, which leads to lower treatment costs.

Results of histomorphological studies

We studied the interaction of the jaw bone tissue with the implants in different periods after surgery (1,3,6 months). For this purpose, a stereoscopic microscope SMP-1 was used, which allows to simultaneously study the metal structures of the implants and the bone tissue adjacent to them. The microscopic findings showed that the surface of the implants showed discrete particles, which were fragments of bone tissue (crumbs) that appeared as a result of the separation of the implants from the main mass of the jawbone

The microscopic examination of the microscope showed that the bone tissue adheres to the implants very well already in the early period of observation (1 month). The implant surface appears quite smooth, without any extraneous inclusions or deposits (Fig. 5). After 3 months, the interaction of the implants with the jaw bone does not differ from that of the previous study period. The bone tissue adheres tightly to the metal surface of the implants and there are cavities of varying sizes at the edge of the bone to implant contact. The contact areas do not show any extraneous inclusions, deposits or cavities. The implant itself is not altered in any way (Fig. 6).

Fig. Microscopic examination of the Implant.uz dental implant after 6 months. Interaction of the native implant with the bone. 6 months. The bone tissue is tightly attached to the implant. SMP-1

After 6 months of follow-up, the bone tissue on the implant surface is homogeneous with a flat surface. The bone surface does not show any extraneous inclusions or impositions and there are no cavities between the implant surface and the bone. However, there are discrete particles on the

implant surface as described above, which are fragments of jawbone that have broken away from the implant during specimen extraction (Fig. 7).

Conclusions

Thus, the data obtained allow us to conclude:

- 1.The domestic dental implant "Implant.uz" made of titanium of BT-1.00 grade, consisting of intraosseous part, containing conical apical part with thread and coronal part, and extraosseous part including crown part, has been developed. At the apical end of the apical part there are anti-rotation notches in the form of cross grooves.
- 2.The developed dental implant, implanted into the jaw bones of the experimental animals did not cause pathological changes in their organism, which allows to recommend it for clinical research;
- 3.Microscopic examination of the jaw bone tissue at 1, 3, 6 months after implantation on the implant-bone interface showed that the bone tissue adheres tightly to the metal surface of the implants; no extraneous inclusions, deposits or cavities are detected in the contact areas.
- 4.The studies performed allow us to recommend implementation of the developed domestic dental implant in the practice of surgical and orthopaedic dentistry.

REFERENCES

1. Salimov O.R. Scientific justification of development of domestic attachment and their clinic - biomichanical assessment of effectiveness at a denture with use of implants // European science review № 3-4 2016 March- April C- 245-247.
2. Salimov O.R., Akbarov A.N., Khabilov N.L., Usmonov F.K., Nigmatova N.R., Shoahmedova K.N. Assessment of effectiveness of bioactive coating for domestic dental implant // "Dentistry. Scientific and practical journal. 2020. №2. C. 15-18.
3. Salimov O.R., Pulatova B.J. The elaboration of mathematical models for forecasting estimation of the efficiency of the lock fixation (attachment) dentures on natural teeth and implants // European Journal of Research, 2020, №2 volume 5; p. 46-57. (№23 Scientific journal impact factor, IF – 5,088).
4. Salimov O.R. Orthopaedic treatment algorithm for periodontal disease using lock-fastening on teeth and implants // Journal of research in health science Vol 1-2 (issue 4), 2020; p. 20-31. (№40 ResearchGate, IF – 0,79).
5. Митрошин А.Н. Сравнительная оценка остеоинтеграции винтовых конических и цилиндрических титановых имплантатов, обработанных методом микродугового оксидирования // Фундаментальные исследования. – 2011. – №9. – С. 447-451.
6. Чертов С.А., Стойков С.В. Обзор свойств материалов, используемых в производстве дентальных имплантатов //Український стоматологічний альманах. - 2013.- № 4.- С. 101-104.
7. Shomurodov K.E. //Comparative assessment of the influence of different methods of palatoplasty on the growth and development of the upper jaw in children with congenital cleft palate. European Science Review. – Vienna. Prague. – 2018. - №5-6. – P
8. Shomurodov. K.E. Features of cytokine balance in gingival fluid at odontogenic phlegmon of maxillofacial area. // Doctor-aspirant 2010.-42 Vol.-No.5.1.-P.187-192;

9. Hua Xi Kou Qiang Yi Xue Za Zhi. 2017 Feb 1;35(1):18-28. doi: 10.7518/hxkq.2017.01.003. Current dental implant design and its clinical importance
10. OA Salimov, SA Khusanova, M Salimov. Study of Factors Affecting the Quality of Raw Cotton During Storage and Processing// - CENTRAL ASIAN JOURNAL OF THEORETICAL & , 2022
11. NL Khabilov, TO Mun, OR Salimov, AB Shukrapov Iyas, Usmonov FK EXPERIENCE OF EXPERIMENTAL APPLICATION OF RATIONAL DESIGN OF DOMESTIC DENTAL IMPLANT// Central Asian journal of medical and
12. НЛ Хабилов, АН Акбаров, ОР Салимов. Влияние съемных пластиночных протезов на микробиоценоз полости рта , НМ Алиева Study of Factors Affecting the Quality of Raw Cotton During Storage and Processing// Medicus, 2016
13. OA Salimov, SA Khusanova, M Salimov... - CENTRAL ASIAN JOURNAL OF THEORETICAL & ..., 2022
14. НЛ Хабилов, С.С Шарипов, А Ўткирбек, АЗ Абдусатторович .ЎСМИРЛАР ТИШ ҚАТОРЛАРИ ВА ОККЛЮЗИОН САТХДАГИ ЎЗГАРИШЛАРНИ ЧАККА ПАСТКИ ЖАҒ БЎҒИМИ РИВОЖЛАНИШИ// Journal of new century innovations 14 (4), 150-151
15. С.СШарипов, А Ўткирбек, АЗ Абдусатторович ЎСМИРЛАР ОККЛЮЗИОН САТХДАГИ ЎЗГАРИШЛАРНИ ЧАККА ПАСТКИ ЖАҒ БЎҒИМИ РИВОЖЛАНИШ ТАЪСИРИГА АДАБИЁТЛАР ШАРҒИ Journal of new century innovations 14 (4), 142-149
16. Хабилов, АН Акбаров, ОР Салимов, НМ Алиева.Влияние съемных пластиночных протезов на микробиоценоз полости рта //НЛ - Medicus, 2016
17. Нигман Лукманович Хабилов, Салим Саломович Шарипов, Одилхон Рустамович Салимов, Алимов Ўткирбек. ТИШСИЗ ПАСТКИ ЖАҒ СУЯК ТЎҚИМАСИ ТУЗИЛМАЛАРИНИНГ СУЯК ИЧИ ТИШ ИМПЛАНТЛАРИГА АСОСЛАНГАН ОЛИНАДИГАН ПРОТЕЗЛАР БИЛАН ЎЗАРО ТАЪСИРИ// 2022/10/22.
18. ОР Салимов.Комплексная реабилитация пациентов с частичным отсутствием зубов, направленная на профилактику прогрессирующей атрофии тканей протезного ложа// Medicus, 2017
19. М Сафаров, О Салимов, Ш Хужаева, Ф Ирсалиева .Микробиологические показатели у больных со средними дефектами зубных рядов после несъемного протезирования//Stomatologiya, 2016
20. NL Habilov, AN Akbarov, OR Salimov .Influence of removable laminar prostheses on the oral microbiocenosis// Medicus, 2016
21. NL Habilov, AN Akbarov, OR Salimov . Influence of removable laminar prostheses on the oral microbiocenosis// Medicus, 2016
22. Ilyas Sh., Usmonov FK EXPERIENCE OF EXPERIMENTAL APPLICATION OF NL Khabilov, TO Mun, OR Salimov, AB Shukrapov .RATIONAL DESIGN OF DOMESTIC DENTAL IMPLANT// Central Asian journal of medical and
23. Influence of removable laminar prostheses on the oral microbiocenosis.// Medicus, 2016
24. ОР Салимов. Комплексная реабилитация пациентов с частичным отсутствием зубов, направленная на профилактику прогрессирующей атрофии тканей протезного ложа// - Medicus, 2017
25. Хабилов¹, А.Н. Акбаров², О.Р. Салимов, Н.М. Алиева, Б.Г. Рахимов Влияние съёмных пластиночных протезов на микробиоценоз полости рта н.л. MEDICUS. 2016. № 6 (12). 82-85.

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26. OA Salimov, SA Khusanova, M Salimov. Study of Factors Affecting the Quality of Raw Cotton During Storage and Processing// - CENTRAL ASIAN JOURNAL OF THEORETICAL & , 2022
 27. NL Khabilov, TO Mun, OR Salimov, AB Shukrapov Iyas, Usmonov FK EXPERIENCE OF EXPERIMENTAL APPLICATION OF RATIONAL DESIGN OF DOMESTIC DENTAL IMPLANT// Central Asian journal of medical and
 28. НЛ Хабилов, АН Акбаров, ОР Салимов. Влияние съемных пластиночных протезов на микробиоценоз полости рта , НМ Алиева Study of Factors Affecting the Quality of Raw Cotton During Storage and Processing// Medicus, 2016
 29. OA Salimov, SA Khusanova, M Salimov... - CENTRAL ASIAN JOURNAL OF THEORETICAL & ..., 2022
 30. НЛ Хабилов, С.С Шарипов, А Ўткирбек, АЗ Абдусатторович .ЎСМИРЛАР ТИШ ҚАТОРЛАРИ ВА ОККЛЮЗИОН САТҲДАГИ ЎЗГАРИШЛАРНИ ЧАККА ПАСТКИ ЖАҒ БЎҒИМИ РИВОЖЛАНИШИ// Journal of new century innovations 14 (4), 150-151
 31. С.СШарипов, А Ўткирбек, АЗ Абдусатторович ЎСМИРЛАР ОККЛЮЗИОН САТҲДАГИ ЎЗГАРИШЛАРНИ ЧАККА ПАСТКИ ЖАҒ БЎҒИМИ РИВОЖЛАНИШ ТАЪСИРИГА АДАБИЁТЛАР ШАРҲИ Journal of new century innovations 14 (4), 142-149
 32. Хабилов, АН Акбаров, ОР Салимов, НМ Алиева. Влияние съемных пластиночных протезов на микробиоценоз полости рта //НЛ - Medicus, 2016.