ISSN: 2582-4686 SJIF 2021-3.261, 2022-2.889, 2023-5.384, 2024-6.875 ResearchBib IF: 9.948 / 2024

THE MULTIDISCIPLINARY JOURNAL OF SCIENCE AND TECHNOLOGY

VOLUME-5, ISSUE-2

COMPARATIVE EVALUATION OF THE EFFECTIVENESS OF USE OF OSTEOPLASTIC MATERIAL IN SINUS LIFT OPERATION

Shadiev Sadulla Samekhjanovich

PhD, Assistant teacher of the Department of Maxillofacial Surgery, Samarkand State Medical University, Samarkand, Uzbekistan

E-mail:Sadi14@mail.ru

Abstract. The study involved 63 patients who underwent sinus lift surgery. During sinus lifting, the effectiveness of bone replacement materials Kolapol KP-3 and Ovis was assessed. A bone density study and X-ray control were performed. It was noted that in the main group using Ovis the effectiveness of operations performed over 2 years was 98.4%. The operation of intraosseous implantation with raising the bottom of the maxillary sinuses can be considered a worthy alternative method for installing zygomatic implants.

Key words: implantation, sinus lift surgery, bone replacement materials, bone density.

СРАВНИТЕЛЬНАЯ ОЦЕНКА ЭФФЕКТИВНОСТИ ПРИМЕНЕНИЯ ОСТЕОПЛАСТИЧЕСКОГО МАТЕРИАЛА ПРИ ОПЕРАЦИИ СИНУСЛИФТИНГ

Аннотация. К исследованию привлечены 63 пациентов которым была проведена операция синуслифтинг. При синуслифтинге проводили оценку эффективности костнозамещающих материалов Колапол КП-3 и Ovis Проводили исследование плотности кости, рентгенологический контроль. Отмечено что, в основной группе с применением Ovis эффективность проведенных операций за 2 лет составила 98,4 %. Операция внутрикостной имплантации с поднятием дна верхнечелюстных пазух может считаться достойным альтернативным методом операции установки скуловых имплантатов.

Ключевые слова. Имплантация, операция синуслифтинг, костнозамещающие материалы, плотность кости.

Relevance of the topic. Dental treatment using intraosseous implants is currently of great interest among specialists and attracts an increasing number of patients (A.A. Kulakov, 1997; R.Sh. Gvetadze, 2001; V.N. Olesova, 2001).

The anatomical and physiological conditions in the distal parts of the upper jaw - cancellous bone, varying degrees of atrophy of the alveolar processes after tooth extraction and a large volume of the maxillary sinuses - in most cases are an obstacle to the successful implementation of standard implantation operations in this area.

In order to obtain reliable fixation of fixed structures in the distal parts of the upper jaw, various alternative treatment methods are used. The most common technique for increasing bone volume in the distal parts of the upper jaw currently remains the operation of raising the floor of the maxillary sinus using bone replacement materials (NystromE. etal., 1993: M. B. Hiirzeleretal., 1997; O.T.Jensen, 1999; Ф.Ф. Лосев, 2000; С.Ю. Иванов с соавт., 2000; Т.Г.Робустова с соавт., 2000; P.Philippartetal., 2003; G.Corrente, R.Abundo, 2004).

A number of authors, providing reports on the work done, describe such complications of the operation as perforation of the mucous membrane of the maxillary sinus during surgery (F. Khoury, 1999 G.M.Raghoebaretal., 2001), early or late nosebleeds, chronic pain (E.Regevetal., 1995), and, as perforation of the mucous membrane of the maxillary sinus during surgery (F.Khoury, 1999

ISSN: 2582-4686 SJIF 2021-3.261, 2022-2.889, 2023-5.384, 2024-6.875 ResearchBib IF: 9.948 / 2024

THE MULTIDISCIPLINARY JOURNAL OF SCIENCE AND TECHNOLOGY

VOLUME-5, ISSUE-2

G.M.Raghoebaretal., 2001), early or late nosebleeds, chronic pain (E.Regevetal., 1995), infection of the sinuses with the development of serous or purulent sinusitis (A.A.Nikitin et al., 1998; J.Wiltfangetal., 2000; DoudGalliS.K. etal., 2001), penetration of implants into the sinus (G.M.Raghoebar, A.Vissink, 2003), formation of an oroantral fistula (E.A. Maloryan, 2000; V.L. Paraskevich, 2001), etc.

Thus, studying the results of implantation surgery in the upper jaw with an increase in bone tissue volume in the maxillary sinus area is an important task for further improvement of this type of surgery.

Research Objective: A comparative evaluation of the effectiveness of osteoplastic material in sinus lift surgery.

The patients were divided into the following groups:

1. Control group: 26 people, for whom Kolapol KP-3 was used as the osteoplastic material.
2. Main group: 27 people, for whom the composite material Ovis was used as the osteoplastic material.

For patients with significant atrophy of alveolar processes in the distal regions of the upper jaw, 63 internal implantation surgeries with sinus lifting were performed (10 surgeries on both sides). The combined material Kolapol KP-3 (Polyplast, Russia) is produced in the form of soft blocks of collagen with hydroxyapatite inclusions. It is easily impregnated with blood during surgery and acquires elastic consistency.

In 16 maxillary sinuses examined via CT scans 10–14 days after surgery with Kolapol KP-3, an increase in the volume of the material was observed.

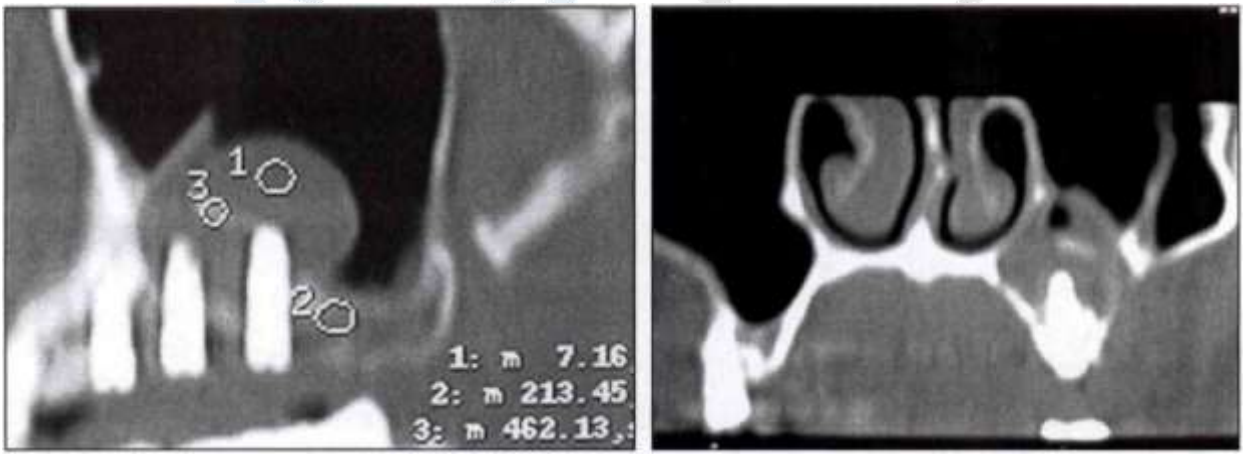


Fig. 1. A dense (462 HU) cortical plate of the bony "window" (3), clearly visible above the distal implant, is turned inward into the sinus. The mucous membrane (1) of the maxillary sinus (density 7 HU) is locally thickened.

At the 6-month follow-up CT scan, we observed densification and a reduction in material height by an average of 5 mm, which is likely due to its loose structure, significant impregnation with a blood clot during the surgery, and subsequent retraction of this clot over time. The mucous membrane of the maxillary sinus returned to its initial state.

ISSN: 2582-4686 SJIF 2021-3.261, 2022-2.889, 2023-5.384, 2024-6.875 ResearchBib IF: 9.948 / 2024

THE MULTIDISCIPLINARY JOURNAL OF SCIENCE AND TECHNOLOGY

VOLUME-5, ISSUE-2

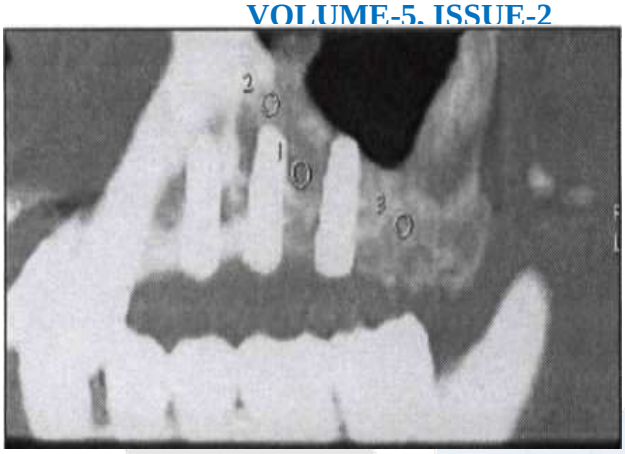


Fig. 2. CT image of the same patient 6 months after surgery.

The material's density immediately after surgery averaged 50–100 HU, indicating its sufficient softness. After 6 months, the density increased to 200–250 HU. Follow-up studies of patients over extended periods revealed that by 8 months, the density reaches the values required for implant functioning—350 HU.

After 10 months, the material densifies to 500 HU and maintains the values necessary for implant retention and functioning within the 2.5–5 year period (Fig. 3). According to CT and OPTG data, when using Kolapol KP-3 with simultaneous implant placement (in 4 out of 20 cases) and with delayed implantation (6 out of 9 cases), insufficient height of the newly formed bone was observed. In cases of simultaneous implantation, the implant apices protruded 1–2 mm above the bone level and remained covered only by the mucous membrane.

In most cases, we found that the condition of the maxillary sinus mucosa remained unchanged after the surgery compared to the preoperative state (Fig. 4).

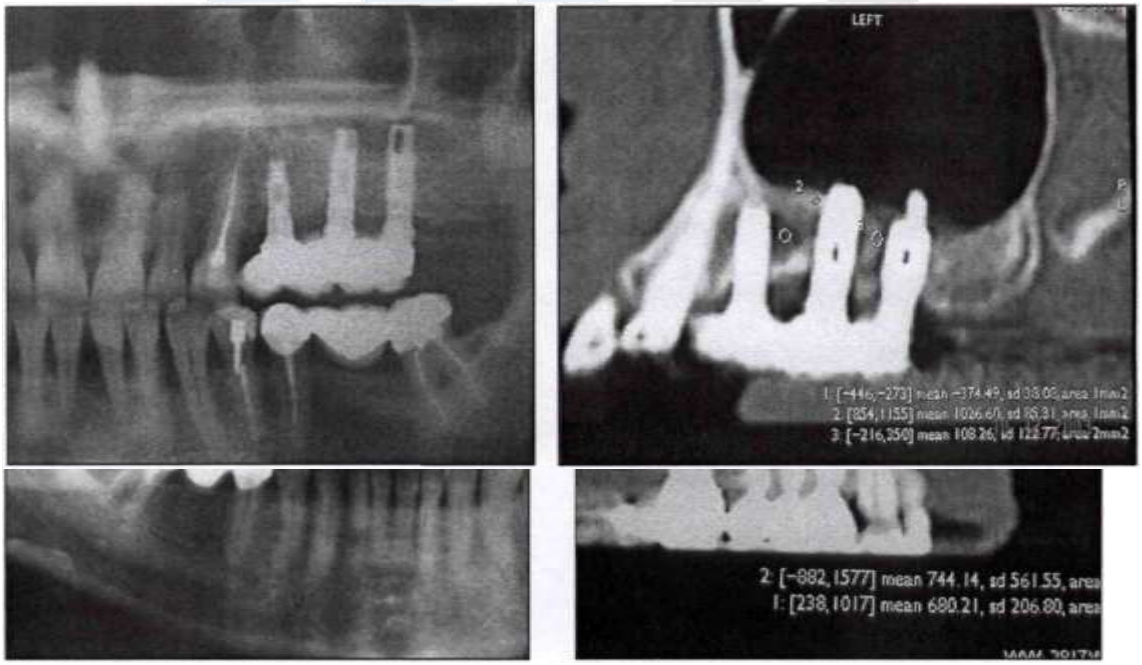


Fig. 3. OPTG and CT images of the patient 2.5 years after surgery involving the sinus floor elevation of the right maxillary sinus with simultaneous implantation. The implants are surrounde by bone tissue of sufficient density, ranging from 680–774 HU. A fragment of the bone tissue (the bony "window") is elevated above the main bone level.

ISSN: 2582-4686 SJIF 2021-3.261, 2022-2.889, 2023-5.384, 2024-6.875 ResearchBib IF: 9.948 / 2024

VOLUME-5, ISSUE-2

Fig. 4. OPTG and reformatted CT images in the semi-sagittal projection of patient P. 3 years after surgery involving intraosseous implantation with sinus floor elevation of the left maxillary sinus. The condition of the bone tissue around the implants is satisfactory. The apex of the distal implant protrudes 2 mm above the bone level. The sinus mucosa remains unchanged.

In the early postoperative period, KP-3 is almost indistinguishable in density from the edematous mucous membrane of the maxillary sinus. However, after 6 months, the histogram shows that the material becomes denser, though still less dense than the alveolar bone. In a series of 29 intraosseous implantation surgeries with bone volume augmentation in the maxillary sinus floor region using Kolapol KP-3, early postoperative complications were observed in 8 cases (27.5%). The most common complications included nasal bleeding, wound bleeding, and suture dehiscence in the surgical area. No adverse consequences were noted during sinus floor elevation surgeries using Kolapol KP-3 as a bone substitute material.

The most convenient material for filling the cavity formed in the maxillary sinus floor area was the composite material Ovis (Korea).

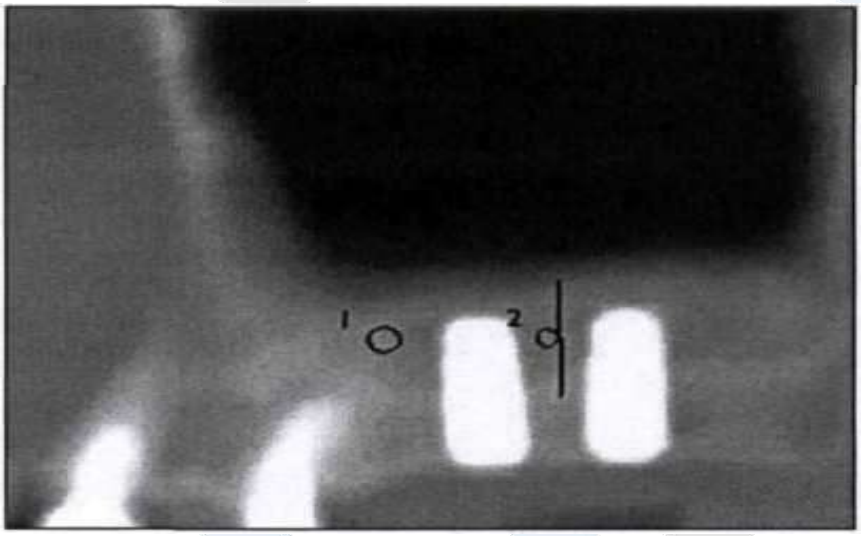


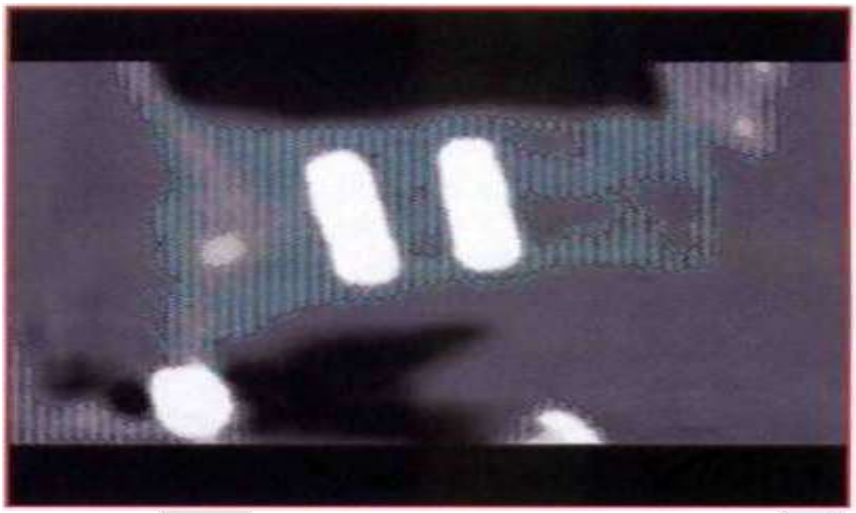
Fig. 5. Reformatted CT scan of the patient in the semi-sagittal projection. Following intraosseous implantation surgery, a homogeneous shadow of the material surrounding the implants is observed. The adjacent mucous membrane of the maxillary sinus is thickened.

The density of the newly formed tissue in the postoperative period ranged from 100 to 300 HU. The maxillary sinus mucosa showed slight parietal thickening. At 6 months postoperatively, the newly formed bone appeared homogeneous on CT, with a density of 400–600 HU.In CT examinations of 15 patients, the Ovis material placed into the cavity for bone volume augmentation generally maintained its volume. However, in cases of delayed implantation, the required bone height was not always achieved.

ISSN: 2582-4686 SJIF 2021-3.261, 2022-2.889, 2023-5.384, 2024-6.875 ResearchBib IF: 9.948 / 2024

THE MULTIDISCIPLINARY JOURNAL OF SCIENCE AND TECHNOLOGY

VOLUME-5, ISSUE-2



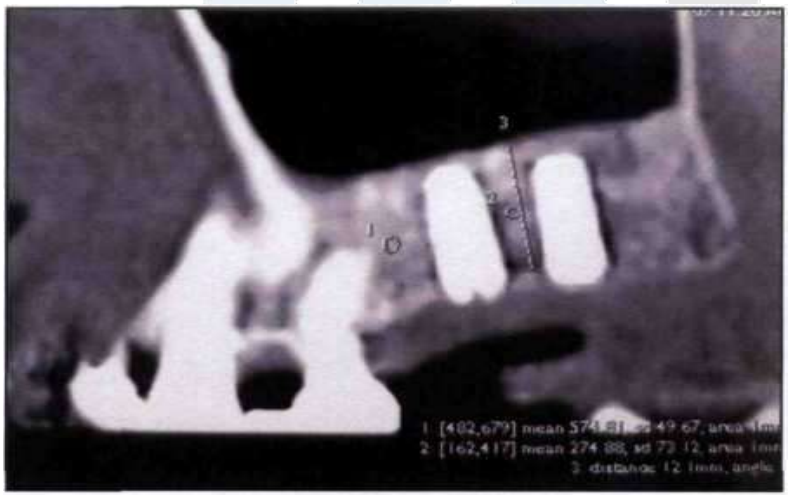


Fig. 6. On the SCT reformatted image of the same patient taken 4 months later, densitometric analysis reveals areas with varying density ranging from 274 to 574 HU. The sinus mucosa remains unchanged.

The density changes observed during the use of the Ovis material are clearly visible in the dynamics on histograms and density distribution graphs.

Fig. 7. Histogram of the patient after surgery. The material surrounding the apices of the implants is less dense than the bone tissue of the alveolar ridge.

As a result of the performed intrabony implantation surgeries with sinus floor elevation, after 6 months, all materials used had sufficient density for implant fixation and functioning. However,

ISSN: 2582-4686 SJIF 2021-3.261, 2022-2.889, 2023-5.384, 2024-6.875 ResearchBib IF: 9.948 / 2024

THE MULTIDISCIPLINARY JOURNAL OF SCIENCE AND TECHNOLOGY

VOLUME-5, ISSUE-2

when using Kolapol KP-3, it was found that the density of the newly formed bone after 6 months was less than 300 HU and reached the required parameters only after 10 months. Despite the similarities, surgeries using different materials differed in the intensity of postoperative manifestations, complications, changes in the volume of the material, and the resulting bone height. In 22 out of 63 cases, insufficient height was achieved—less than 11-13 mm (since in the distal areas of the upper jaw, implants of 11-13 mm in length were primarily used for proper distribution of the chewing load). Analyzing the obtained results, we found that the height of the newly formed bone tissue is more dependent on the amount of material used during the surgery than on the nature of the material itself. Thus, the effectiveness of the surgeries we performed over 2 years was 98.4%. Based on the results, the intrabony implantation surgery with sinus floor elevation can be considered a worthy alternative method to the installation of zygomatic implants (surgical success rate 97% - AI. Nawas et al., 2004), Le Fort I osteotomy (94.6% - Stoelinga P. et al., 2000; 92.8% - K. Nelson et al., 2002), as well as the placement of plate-type implants in this area (83% - E.A. Maloryan, 2000). The obtained result of the surgery (98.4%) is comparable to the results of traditional installation of intrabony implants in the upper jaw without additional interventions.

LIST OF REFERENCES:

1. Мусурманов Ф.И. Случай перфорации дна гайморовой пазухи с двух сторон в области 26 и 15 зубов /Ф.И. Мусурманов., С.С. Шодиев // Вестник науки и образования.2020.- №20 (98).Част 1.С.66-69.
2. Элназаров А.Т. Экспериментальное применение ксенотрансплантата при операции синуслифтинг/ А.Т. Элназаров., С.С. Шадиев// Достижения науки и образования, №12(53) 2019. Россия. Стр.114-118.
3. Shodiev S.S. Method of plasty of the lateral wall of themaxillary sins in sinus lifting/ Shodiev S.S., K.D. Olimjonovna //Science and innovation international scientific journal V.1. (D3).2022.-P. 189-192 SCINCE AND INNOVATION
4. Ismatov F.A. Analysis of the study of dental and general health of university students in Samarkand/ Ismatov F.A. Shodiev S.S., Musurmanov F.I. // Journal of Biomedicine and Practice.2020. – №. 6. – P. 34-39.
5. Shodiyev S.S. Comparative evaluation of the use of various materials after tooth extraction in the preimplantation period /S.S. Shodiyev, B. Kodirova // International Bulletin of Medical Sciences and Clinical Research №3. (2)-P. 23-27.
6. Шодиев С.С. Эффективность применения отвара аниса при лечении периимплантитов/ С.С. Шодиев, Ф.А. Исматов, Д.Б. Нарзиева, Н.О. Тухтамишев, Б.С. Ахмедов. Достижения науки и образования, №11(52).-2019. -С.-99-103.
7. Мусурманов Ф.И. Микробиологическая оценка эффективности фитотерапии при флегмонах челюстно-лицевой области/ Ф.И. Мусурманов, С.С. Шодиев// Проблемы биологии и медицины 2 (94).- 2020.-С.143
8. Шадиев С.С. Микробиологическая оценка эффективности фитотерапии при флегмонах челюстно-лицевой области у детей. С.С. Шадиев, Ф.И. Мусурманов. Журнал проблемы биологии и медицины.-2017.-С.-139-141
9. Shadiev S.S. Relationship of the parameters of endogenous intoxication with fatty acids in patients with phlegmons of the maxillofacial region/ SS Shadiev, MI Azimov// Украинский журнал хирургии.-2013-С.-102-105

ISSN: 2582-4686 SJIF 2021-3.261, 2022-2.889, 2023-5.384, 2024-6.875 ResearchBib IF: 9.948 / 2024

THE MULTIDISCIPLINARY JOURNAL OF SCIENCE AND TECHNOLOGY

VOLUME-5, ISSUE-2

10. Хамитова Ф. Совершенствование методов лечения одонтогенных кист челюстей/ Ф Хамитова, Ф.И. Мусурманов, С.С. Шадиев// Журнал проблемы биологии и медицины.-2017.-С.-132-134

11. Shadiev S.S. Endogenous intoxication level, contain fatty acids and their relationship in children with chronic osteomyelitis of the jaws/ S.S. Shadiev, D.U. Fozilova// Int. J. Med. Health Res 2 (12).- 2016.-P.-9-12

12. Мусурманов Ф.И. Способ лечения хронических синуситов с ороантральным сообщением путем свободной пересадки костного трансплантата/ Ф Мусурманов, С.С. Шадиев, Д.Д. Ибрагимов// Журнал вестник врача 1 (3).-2014.-С.-157-157.

13. Shadiev S. S. EXPERIMENTAL USE OF XENOTRANSPLANT IN SINUS LIFT OPERATION/Shadiev Sadulla Samekhjanovich//EURASIAN JOURNAL OF ACADEMIC RESEARCH Volume 4, Issue 9, September 2024. Page 189-196

14. Гаффаров У.Б. Влияние препарата «холисал гель» на послеоперационное течение у пациентов после удаления ретинированных третьих моляров/ У.Б. Гаффаров, С.С. Шодиев, Ф.А. Исматов// СОВРЕМЕННЫЕ ДОСТИЖЕНИЯ СТОМАТОЛОГИИ: сборник, 2018-ББК 56.6 С.- 56 .

15. Олимжонова Ф.О. Прогностическое значение спектра цитокинов слюны и их изменения при острых и хронических рецидивирующих стоматитах у детей./ Ф.О. Олимжонова Г.У. Самиева, С.С. Шадиев. КОНЦЕПЦИИ ФУНДАМЕНТАЛЬНЫХ И ПРИКЛАДНЫХ НАУЧНЫХ ИССЛЕДОВАНИЙ: Агентство международных исследований. Международная научно практическая конференция. Уфа 09.12.2017г. часть 6.стр 83-85

16. С.С. Шадиев Фитотерапия при флегмонах челюстно-лицевой области у детей/ С.С. Шадиев, У.Б. Гаффаров// Сборник всероссийской научнопрактической конференции с международным участием, «Комплексный подход к лечению патологии зубо-челюстной системы». М/-2018.С.123

17. Шадиев С.С. Изучение жирнокислотного состава крови при остеомиелитах челюстей у детей на фоне озонотерапии/ С.С. Шадиев, Д.У. Фозилова// Стоматология 1 (3 (68)).-2017.-С.61-64

18. Азимов М.И. Оценка эффективности озонотерапии у больных с флегмонами челюстно-лицевой области по маркерам эндогенной интоксикации/ М.И. Азимов С.С. Шадиев// Stomatologiya 1 (2 (67)).- 2017.-С. 85-87.

19. Shadiev S.S. The effectiveness of ozone therapy in treatment of acute osteomyelitis of jaws in children/ S.S. Shadiev. F.D. Ulugbekovna// European science review.2017.- P.-148-150

20. Шадиев С.С. Некоторые аспекты лечения флегмон чло у детей/ С.С. Шадиев, С.Ш. Саидмурадова// Актуальные вопросы гигиенической науки: -2024.-С.414.

21. Шадиев С.С. Комплексное лечение периимплантитов с применением настойки аниса/ С.С. Шадиев, С.У. Назарова// Стоматология-наука и практика, перспективы развития.-2021.-С.238-240

22. Шадиев С.С. Микробиологический мониторинг гнойной раны при флегмонах челюстно-лицевой области у детей при различных методах диагностики/ С.С Шадиев, Х,Т. Худойбердиев// Журнал проблемы биологии и медицины.-2016.- С.119-122

23. Шадиев С.С. Определение показателей микробной флоры у детей с флегмонами челюстно-лицевой области методом газожидкостной хроматографии/ С.С. Шадиев, М.И. Азимов// Stomatologiya 1 (4 (65)).-2016.-С.70-73

ISSN: 2582-4686 SJIF 2021-3.261, 2022-2.889, 2023-5.384, 2024-6.875 ResearchBib IF: 9.948 / 2024

THE MULTIDISCIPLINARY JOURNAL OF SCIENCE AND TECHNOLOGY

VOLUME-5, ISSUE-2

24. Шадиев С.С. Гигиенический мониторинг лечения хронического генерализованного пародонтита с применением продукта природного происхождения/ С.С. Шадиев, Д.Т. Дусмурадова, Н.А. Хожиева// СТОМАТОЛОГИЯ: НАУКА И ПРАКТИКА, ПЕРСПЕКТИВЫ РАЗВИТИЯ -2015.-С.120-123

25. Шадиев С.С. Эффективность применением продукта природного происхождения при лечении хронического генерализованного пародонтита/ С.С. Шадиев, Д.Т. Дусмурадова, Н.А. Хожиева// СТОМАТОЛОГИЯ: НАУКА И ПРАКТИКА, ПЕРСПЕКТИВЫ РАЗВИТИЯ.-2015.-С.123-127

26. Шадиев С.С. Частота встречаемости альвеолитов по данным областной стоматологической поликлиники города Самарканда/ С.С. Шадиев, А.Б. Шаркиев, Р.А. Шамсиев, Ж.Э. Махмудов. Молодежь и медицинская наука в XXI веке, 2014.-С.490-490

27. Шадиев С.С. Взаимосвязь показателей эндогенной интоксикации с содержанием жирных кислот у детей с флегмонами челюстнолицевой области/ С.С. Шадиев, М.И. Азимов// Український журнал хірургії, 2013.-С.102-105

28. Шадиев С.С. Актуальные вопросы гигиенической науки: исторические аспекты и современные тенденции/ С.С. ШАДИЕВ, С.Ш. САИДМУРАДОВА. Приволжский исследовательский медицинский университет КОНФЕРЕНЦИЯ.

29. Шадиев С.С. Болалар юз-жағ соҳаси флегмоналарини даволашда арпабодиён эфир мойини маҳаллий қўллаш/ С.С. Шадиев, У.Б.// Гаффаров. МЕЖДИСЦИПЛИНАРНЫЙ ПОДХОД ПО ЗАБОЛЕВАНИЯМ ОРГАНОВ ГОЛОВЫ И ШЕИ, С. 213.

30. Шадиев С.С. Сравнительная оценка комплексного лечения острого одонтогенного остеомиелита челюстей у детей/ С.С. Шадиев //Journal of science-innovative research in uzbekistan 2 (5).2024.-С.720-731.

31. Шадиев С.С. Газохроматографический анализ микробного пейзажа при комплексном лечении флегмон челюстно-лицевой области у детей/ С.С. Шадиев // Eurasian journal of medical and natural sciences 4 (Issue 5, Part 2).2024.-С.83-89.

32. Шадиев С.С. Применение фитотерапии при комплексном лечении флегмон челюстно-лицевой области у детей/ С.С.Шадиев //Евразийский журнал академических исследований 4 (5 Part 3).2024.-С. 7-13.

33. Шадиев С.С. Bolalarda og’iz bo’shlig’idagi o’sma va o'smasimon xosilalar strukturasi va lokalizatsiyasi/ Шадиев С.С.// JOURNAL OF BIOMEDICINE AND PRACTICE 9 (1).2024.-С. 307-314.

34. Шадиев С.С. ПРОБЛЕМЫ ДИАГНОСТИКИ, ПРОФИЛАКТИКИ И ЛЕЧЕНИЯ ОДОНТОГЕННЫХ ОСТЕОМИЕЛИТОВ ЧЕЛЮСТЕЙ (литературный обзор) /Шадиев Саъдулла Самехжанович //EURASIAN JOURNAL OF MEDICAL AND NATURAL SCIENCES Volume 4 Issue 9, September 2024. -С. 140-150.

35. Марупова Н.И. СТАНОВЛЕНИЕ НАУЧНОГО МЫШЛЕНИЯ МАГИСТРАНТОВ/ Марупова Н.И., С.С. Шадиев //JOURNAL OF SCIENCE-INNOVATIVE RESEARCH IN UZBEKISTAN volume 3, issue 01, 2025. Yanuary 3(1), 494-504. https://universalpublishings.com/index.php/jsiru/article/view/9728

36. Шадиев С.С. ЦИТОЛОГИК ТАХЛИЛЛАР БЎЙИЧА ПЕРИИМПЛАНТИТЛАРНИ КОМПЛЕКС ДАВОЛАШНИ ҚИЁСИЙ БАХОЛАШ/Шадиев С.С., ст 508 гр А.С. Мавлонов., ст 508 гр Б. М. Ражабов //

37. JOURNAL OF SCIENCE-INNOVATIVE RESEARCH IN UZBEKISTAN volume 3, issue 01, 2025. Yanuary 3(1), 505-518 https://universalpublish