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Case Report

MAXILLOFACIAL REHABILITATION IN PATIENT WITH NEOPLASMS USING ZYGOMATIC IMPLANT-SUPPORTED PROSTHESES

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Abstract

Objective: The aim of this study was to report the clinical results of the use of the zygomatic implants for prosthetic rehabilitation in patients with maxillectomy due to upper jaw tumors.

Materials and Methods: The study included 12 patients who underwent prosthetic rehabilitation using a zygomatic implant after maxillectomy for the treatment of upper jaw tumors in the period from 2021 to 2023. There were 8 male patients and 4 female patients with an average age of 53.2 years old. The type of tumors was determined by CT, MRT methods and histopathological examination. The distribution of lesions was the following: benign 4 and malignant 8.

7 patients have undergone radiation therapy before or after implant placement. After the tumor was removed, immediate surgical obdurators were placed. Main prosthetic rehabilitation performed 6-12 months after tumor removal, but before that, a temporary obturator had made and used. 6-12 months after tumor resection, 1-4 zygomatic implants were inserted into the zygomatic bone unilaterally or bilaterally. A total of 36 zygomatic implants were installed, 2 of which were unsuccessful and were removed in 1 patient. The implant systems used Zygoma TiUnite (Nobel Biocare, Zurich, Switzerland) and multi-unit abutments (MUA). The implants were placed using the surgical guide, which was planned and prepared digitally. After which they loaded immediately using prefabricated complete dentures. They verified, adapted and screwed by titanium bases onto the zygomatic implants. The palatal part of these prostheses is a separate unit, which attach to the main part of the prostheses with magnets. By detaching the palatal part of the prostheses, through the created opening, doctor or patient can keep track of the upper tissues, hygiene and antiseptic cleansing (irrigation, rinsing). Evaluation of functional efficiency of the treatment was assessed before and after prosthetic rehabilitation with zygomatic implants using the Oral Health Impact Profile (OHIP-14) and the masticatory functional index. QOL was evaluated using the University of Washington Quality of Life version 4 (UW-QOLv4) questionnaire.

Results: No postsurgical complications were seen, and the patients were discharged from the hospital after 7-10 days. The patients were able to return to a normal diet (hard) after just 7 days following surgery, with no further complaints regarding function or pain, apart from the residual swelling caused by the intervention. Patients' health-related quality of life (HR-QOL) before treatment was ≥48.3%. HR-QOL and overall quality of life after rehabilitation increased to 76.8%, and assessed as good. The improvement of chewing function was also the most important goal for the patients (pre- 26,4% and post- 67,3%), masticatory function scores increased after prosthetic treatment with implants.

Conclusions: The use of prostheses fixed on zygomatic implants for patients with maxillary defects is an effective method of prosthodontic rehabilitation in complex clinical cases after maxillectomy.

Keywords: *zygomatic implants, prosthetic rehabilitation, upper jaw tumors, maxillectomy.*

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Introduction

Defects resulting from resection of the upper jaw, in malignant maxillofacial areas, often lead to loss of dentition, defects, sudden changes in the anatomical shape of the face and require radical surgical reconstruction and prosthetic rehabilitation.[1]

In patients after maxillectomy for a malignant tumor, the resulting defect in the upper jaw often leads to serious dysfunction of the oral cavity leading to serious problems in mastication, swallowing, speech, and facial aesthetics.[2]

Prosthetic rehabilitation of patients after oncological resection of the upper jaw is a complex problem associated with the physiological and anatomical separation between the oral cavity and the nasal/paranasal region.[3-5]

In a number of clinical situations, rehabilitation was mainly carried out using a removable obturator prosthesis, which was effective.[6] However, this decision was difficult due to clinical limitations when the resection affected most of the soft palate, more than a third of the hard palate and the upper jaw; it was technically difficult to fix the prostheses. Prosthetic rehabilitation of this category of patients using traditional fixation of dentures may be ineffective in restoring oral function. Due to insufficient bone tissue, the installation of conventional dental implants after resection of a malignant tumor of the upper jaw to fix prostheses is often difficult.[7]

Maxillectomy is not limited to tumor removal but also includes restoring the function of the oronasal cavity and facial contours, as failure to do so can lead to psychosocial and functional problems.

In patients who have undergone a complete or partial maxillectomy, the use of zygomatic implants is one of the main methods to help support obturators and/or removable dentures.[8-10]

Zygomatic implants provide a predictable solution for restoring dentition and facial structures affected by malignant diseases of the upper and midface. Combined use of dental and zygomatic implants may help restore oral function in patients with severe maxillary defects.[11-13]

The concept of using zygomatic implants has been introduced since the present time; this technique is used both separately and in combination, and in combination with microvascular transfer of free tissue in prosthetics and prosthodontic treatment of cancer patients. Over the past 10 years, zygomatic implants have become an integral part in the treatment of patients with neoplasms of various etiologies of the upper jaw and midface that require radical resection to achieve cure.[14,15]

Zygomatic implants are an effective solution for the treatment of jaw bone defects of the upper jaw after maxillectomy. Zygomatic implants have been used since the late 1980s and have a long history of success.

First proposed by Branemark et al. In 1998, zygomatic implants were intended for the rehabilitation of patients with severe atrophy of the posterior maxilla, partially and completely edentulous, in patients with maxillectomy.[16]

Zygomatic implants have been used for dental rehabilitation in patients with insufficient bone tissue in the posterior maxilla due to severe bone resorption (atrophy), after resection of tumors and extensive trauma to the midface.[17] Zygomatic is an alternative to bone grafting procedures for severe atrophy in the upper jaw and consists of dental implants that are fixed in the lower part of the cheekbones through the sinuses. These implants are inserted at the back and can be combined with several conventional implants (root forms) at the front of the jaw.[18-20]

The zygomatic bone has joints with the sphenoid bone, superior bone, frontal bone and temporal bone, forms the lateral wall of the orbital floor and, characterized by trabecular and cortical components, is a reliable bed for zygomatic implants.[21]

Zygomatic implants are installed in different ways: bilateral two implants, bilateral with one implant, unilateral with one or two implants and in combination with conventional dental implants.[22]

With zygomatic implants, the post-implantation period is associated with less severe morbidity compared to bone grafting options and an increase in the overall duration of treatment.

Over the past period, zygomatic implants have demonstrated a scientifically based surgical and prosthetic solution with their widespread use in various clinical situations in procedures for treatment of severe maxillary atrophy, alternatives to failed cases of traditional implants, in cases trauma and oral cancer rehabilitation upper jaw.

Many literature publications report varying success rates from 98.5% to 96.1% after more than 5 years, so the overall effectiveness and predictability of such rehabilitation is still a matter of debate. The most common complications were soft tissue dehiscence, rhinosinusitis, and prosthetic failure.[23]

The effectiveness of zygomatic implants has been enhanced by the use of digital technologies (virtual planning based on computed tomography with the creation of individual surgical templates), which allows the final dental prostheses to be precisely created with maximum precision and in the safest possible conditions.[24]

Effective use of dentures supported by zygomatic implants and dental implants can provide complete functional and aesthetic rehabilitation in patients with post-resection severe defects of the upper jaw.[25-28]

Treatment of patients with cancer of the upper maxilla and hard palate is a difficult task for specialists, and untimely prosthetic rehabilitation leads to significant functional and aesthetic consequences. Considering the relevance of this problem, in this clinical series we show the effectiveness of an interdisciplinary approach in the complex rehabilitation of patients in this category.

In patients undergoing maxillectomy, quality of life involves reconstruction of the maxilla and restoration of the function of the orofacial cavity and facial contours, since orofacial deformities can lead to severe psychological and social consequences[29]. Changes in anatomy after maxillectomy lead to functional and cosmetic impairments, which can lead to reduction in quality of life (QoL).[30,31]

The aim of the present study was to report the clinical results of the use of zygomatic implants for prosthetic rehabilitation in patients with maxillectomy for tumors of the maxilla.

Material and Methods

During the period from 2021 to 2023, 12 patients took part in this study and underwent prosthetic rehabilitation using a zygomatic implant after maxillectomy for the treatment of upper jaw tumors. In order to clarify the diagnosis and later plan and choose a surgical method, a complex of diagnostic methods performed.

The type of tumors was determined by CT, MRT methods and histopathological examination.

Out of 12 patients there were 8 male and 4 female with an average age of 53.2 years. Test results clarified the tumor types: 4 benign (ameloblastoma 2, osteoblstoclastoma 2) and 8 malignant (mainly minor salivary gland tumors 2, adenoid cystic carcinoma 2, cancer of the mucous membrane 4).

Surgical defect classified using Brown classification of maxillectomy.[32]

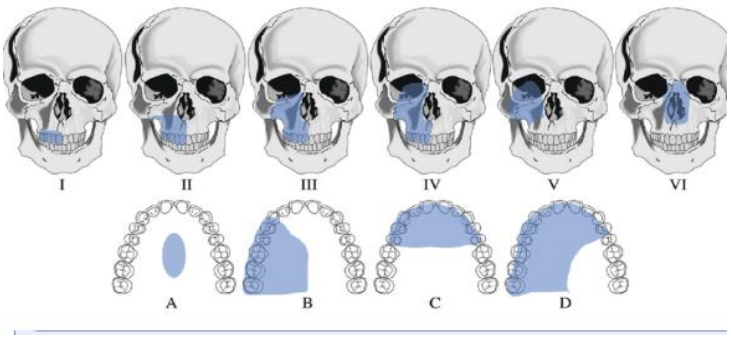
Surgical defect classified according to vertical dimension of the maxillectomy, class 1–4.

Class 1: no oro-nasal or oro-antral fistula or only resection of palatal bone leaving dental-bearing part of maxilla intact.

Class 2: not including orbital floor or rim.

Class 3: including orbital floor with or without skull base.

Class 4: orbital exenteration. Class 2–4 is qualified by addition of a letter (a–c) which refers to the horizontal aspect: a, less than or equal to the midline of the hard palate; b, bilateral alveolar maxilla and hard palate; c, entire alveolar maxilla and hard palate (figure 1).



Brown and Shaw Maxilla and Midface Defect Classification

The patients were operated under general anesthesia. Some underwent either partial or total maxillectomy, others needed procedures that extending beyond the maxilla. Hemimaxillectomy was the most common surgical procedure. 7 patients received radiation therapy before or after maxillectomy.

After the tumor was removed, immediate surgical obturators were placed. Main prosthetic rehabilitation performed 6-12 months after tumor removal, but before that, a temporary obturator had made and used. 6-12 months after tumor resection, 1-4 zygomatic implants were inserted into the zygomatic bone unilaterally or bilaterally. A total of 36 zygomatic implants were installed, 2 of which were unsuccessful and were removed in 1 patient. The implant systems used Zygoma TiUnite (Nobel Biocare, Zurich, Switzerland) and multi-unit abutments (MUA). The implants were placed using the surgical guide, which was planned and prepared digitally. After which they loaded immediately using prefabricated complete dentures. They verified, adapted and screwed by titanium bases onto the zygomatic implants. The palatal part of these prostheses is a separate unit, which attach to the main part of the prostheses with magnets. By detaching the palatal part of the prostheses, through the created opening, doctor or patient can keep track of the upper tissues, hygiene and antiseptic cleansing (irrigation, rinsing).

This case report describes the management of patients with severe maxillary defects following ablative cancer surgery who were rehabilitated with maxillary removable dentures supported by 3 zygomatic implants and magnetic fixation.

Case report

On 05/14/2023 64 years old male patient AA, was admitted to the clinic with a diagnosis of a condition after a maxillectomy of the left side. From the anamnesis it turned out that on 03/30/2015 a maxillectomy of the left side was performed for cancer of the left maxillary sinus mucous membrane (T4N0M0). The patient received preoperative and postoperative radiation therapy.

At the time of admission, the general condition was stable, a defect in the oral cavity in the area of the left half of the upper jaw was detected, the mucous membrane was normal without visible changes. The patient was wearing a removable denture.

Completed general laboratory research showcased that laboratory parameters were normal, according to CT the condition after maxillectomy of the left side, complete adentia, bone absorption. It was planned to install 2 zygomatic implants on the left side, 1 on the right and immediate rehabilitation with complete dentures, which immediately would be connected to the multiunit abutments of the zygomatic implant. After 6 months final prostheses were placed. Treatment plan was agreed with the patient beforehand. The installation of the zygomatic implant was carried out under general anesthesia according to the plan and after the operation a temporary prosthesis was installed and screwed on implants. After 6 months the final rehabilitation was carried out with a removable prosthesis connecting to the multi-unit abutment of the zygomatic implant. In the palatal part of the removable prostheses a movable window was formed for hygiene: this movable part of the plate was fixed to the main fixed part of the denture with magnets. After rehabilitation, the patient was satisfied with the results of the treatment, chewing functions were restored and the quality of life improved (figures 2-18).

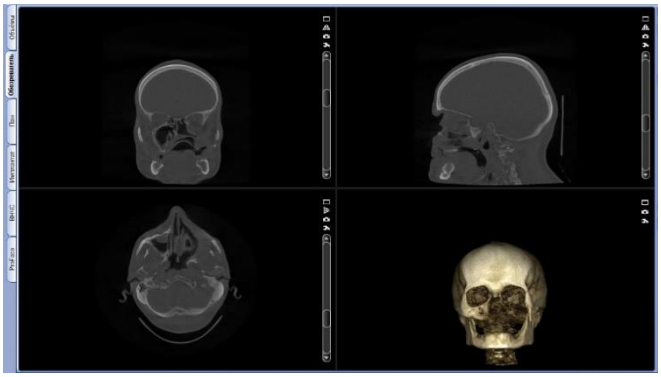


Figure 1. *Condition 8 years after maxillectomy of the left side*

Figure 3. *8 years after tumor resection, 2 zygomatic implants into the right zygomatic bone*

Figure 4. *1 zygomatic implant into the left zygomatic bone*

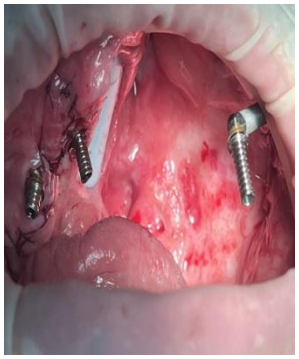


Figure 5. *Condition after installation of implants and multi-unit abutments*

Figure 6, 7. *Postoperative CT after installation of 2 zygomatic implants on the right side and 1 on the left side and connection of multi-unit abutments*

Figure 8. *After 6 months an impression was taken for final rehabilitation*

Figure 9. *An individual tray was made in the laboratory*

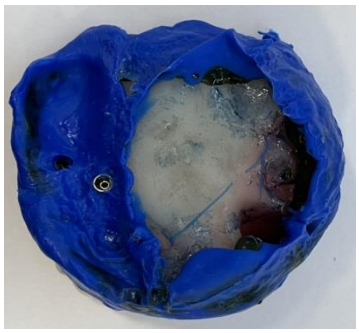


Figure 10. *Impression was taken using an individual tray*


Figure 11, 12. *A temporary seminal prosthesis was made in the laboratory*

Figure 13. *Intraoral view with the prosthesis in place*



Figure 13, 14, 15. *The final prosthetics. In the new part of the removable prostheses a movable window was formed for hygiene*

Figure 16. *Intraoral state before prosthetics*

Figure 17. *Intraoral view after prosthetics*

Evaluation of functional effectiveness of the treatment was assessed before and after prosthetic rehabilitation with zygomatic implants using the Oral Health Impact Profile (OHIP-14) and the masticatory functional index. QOL was evaluated using the University of Washington Quality of Life version 4 (UW-QOLv4) questionnaire. The entire Quality of Life Assessment questionnaire consists of 12 domains, questions, each of which has from 3 to 6 answer options, which are scaled from 0 (worst) to 100 (best) in accordance with the hierarchy of answers. Domains: pain, appearance, activity, rest, swallowing, chewing, speech, taste, saliva, mood and anxiety. Quality of life scores were divided into satisfactory (60 points), good (80 points) and very good (100 points)33. Data was analyzed using statistics. Masticatory function was assessed using the Masticatory Function Score Sheet.

Results

A total of 36 zygomatic implants were installed, 2 of which were unsuccessful and were removed in 1 patient.

No post-operative complications were reported and the patients were discharged from the hospital after 10 days. The patients were able to return to a normal diet (solid) after just 7 days from surgery, with no further complaints regarding function or pain, apart from the residual swelling caused by the intervention.

Prosthetic rehabilitation began after tumor removal and an immediate temporary obturator was made.

Patients' health-related quality of life (HR-QOL) before treatment was ≥48.3%. HR-QOL and overall quality of life after rehabilitation was rated good by 76.8%, respectively. In all cases chewing was also the most important function for the patients, (pre implantation 26,4% and post 67,3%) masticatory function scores increased after prosthodontics treatment with implants.

Evaluation on OHIP-14 and functional chewing score

Questionnaire	OHIP-14		Functional chewing score	
	Pre	Post	Pre	Post
Patients 12	≥ 48.3%	76.87%	26.4%	67.3%

Discussion

The treatment complex for neoplasms includes maxillectomy - surgical removal of part or all of the upper jaw, it results in a defect that can significantly affect a person's function, aesthetics, and quality of life.[34]

Malignant neoplasms account for almost half of the pathologies that are indications for resection of the maxilla. Maxillectomy for malignancy often results in a maxillary defect and severe oral dysfunction.

In patients who have undergone a complete or partial maxillectomy, the use of zygomatic implants is one of the main methods to help support obturators and/or removable dentures.[35,36]

There is no clear consensus in the scientific literature on the number of dental and zygomatic implants required for prosthetic rehabilitation of the maxilla in patients with post-resection defects of the maxilla supported by implants. Some authors recommend using 2-4 zygomatic implants or a combination of two dental implants and 2 zygomatic implants for functional and aesthetic rehabilitation in patients after maxillectomy.[37] Sato et al reported that the mean scores of complete denture wearers were: “satisfied” was 58.7, “somewhat satisfied” was 48.5, and “not satisfied” was 32.4. These assessments provide a ready explanation that the assessment of masticatory function is closely related to chewing satisfaction.[38]

In patients with a resection maxillary defect, the load on the prostheses and transfer to the implant may increase during occlusion compared to traditional implant-supported dentures without a maxillary defect. For the prostheses, a favorable position and angle of installation of the implant are important. It is expected that rigid retention between the prostheses and the implant may increase the risk of prosthetic complications, including fracture of the prostheses, abutment and implant. Based on this, the use of magnetic can be optimal since with this type of fastening they resist only vertical force and do not resist lateral force, which is low compared to lateral force.

The use of computer-aided design/computer-aided manufacturing (CAD/CAM) technologies can help in the prosthodontics rehabilitation of patients with post-resection oncological defects of the maxilla.[39]

Maxillectomy for malignancy often results in a maxillary defect and severe oral dysfunction. The effective use of dental and zygomatic implants can help restore oral function in patients with severe maxillary defects.

The risk of prosthodontics complications, including fracture of the prostheses, abutment and implant, can be increased during rehabilitation using removable dentures on implants due to rigid retention between the prostheses and the implant.

For removable dentures on implants, various fastening systems (telescopic crowns, rods, locators, balls and magnets) are successfully used.[40] Since magnetic mounts only resist vertical force and do not resist lateral force, retention is considered to be low relative to lateral force compared to other mounts. Consequently, the abutment and implant body appear to be protected better.

This case report describes the management of 12 patients with severe maxillary defects following ablative surgery for cancer who were rehabilitated

using fixed maxillary prostheses supported by dental and zygomatic implants. In our clinical case, a magnetic fastening system was preferred to keep track of the upper tissues, hygiene and antiseptic cleansing. Prosthetic rehabilitation was carried out using removable dentures supported by 1 or 3 implants and screw fixation. Oral function was assessed before and after implant prosthetics using the Oral Health Impact Profile (OHIP-14) and the Masticatory Functional Index. These results indicate that quality of life (QoL) and oral function improved. The results showed improvement in all cases. This approach will provide a number of advantages. First, in many cases, additional maxillary reconstruction procedures will not be required. Secondly, the installation of implants and the manufacture of prostheses become easier. Finally, the time required for surgery is reduced, and the reduced number of implants reduces cost. The effective use of dental and zygomatic implants can help restore oral function in patients with severe maxillary defects. The prognosis for this treatment was acceptable.

Declarations

Conflict of interest and financial disclosure

The author declares that he has no conflict of interest and there was no external source of funding for the present study. None of the authors have any relevant financial relationship(s) with a commercial interest.

Ethical approval

Research protocol was approved by the local Ethical Committee (2018/23) and in accordance with those of the World Medical Association and the Helsinki Declaration.

Informed consent

Informed consent was obtained from all individual participants included in the study.

Source of Funding

Non funding.

Availability of Data and Materials

Not applicable.

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ՎԵՐԻՆ ԾՆՈՏԻ ՆՈՐԱԳՈՅԱՑՈՒԹՅՈՒՆՆԵՐՈՎ ՀԻՎԱՆԴՆԵՐԻ ԴԻՄԱԾՆՈՏԱՅԻՆ ՎԵՐԱԿԱՆԳՆՈՒՄԸ ԶԻԳՈՄԱՏԻԿ ԻՄՊԼԱՆՏՆԵՐԻ ՎՐԱ ՀԵՆՎՈՂ ՊՐՈԹԵԶՆԵՐԻ ՄԻՋՈՑՈՎ

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Ամփոփում

Նպատակը. Այս հետազոտության նպատակն էր վերին ծնոտի ուռուցքների պատճառով վիրահատված հիվանդների մոտ գնահատել զիգոմատիկ իմպլանտների օգտագործմամբ օրթոպեդիկ վերականգնման կլինիկական արդյունքները:

Նյութեր և մեթոդներ. Հետազոտությունը ներառում էր վերին ծնոտի ուռուցքներով 12 հիվանդներ, ովքեր 2021-ից 2023 թվականներին ուռուցքների վիրահատական բուժումից հետո ենթարկվել էին պրոթեզային վերականգնման՝ օգտագործելով զիգոմատիկ իմպլանտներ: Նրանց թվում են եղել 8 տղամարդ և 4 կին հիվանդներ, միջին տարիքը՝ 53.2 տարեկան: Ուռուցքների տեսակը որոշվել է CT, MRI և հիստոպաթոլոգիական հետազոտությամբ: Նորագոյացությունների բաշխվածությունը եղել է բարորակ՝ 4-ում, չարորակ՝ 8-ում: Ուռուցքի հեռացումից առաջ և հետո 7 հիվանդ ստացել է ճառագայթային թերապիա: Ուռուցքի հեռացումից անմիջապես հետո տեղադրվել են վիրաբուժական անհապաղ օբտուրատորներ: Վերքերի ապաքինումից հետո, ուռուցքի հեռացումից 6-12 ամիս հետո մեկ կամ երկու այտոսկրերում տեղադրվել են 1-4 զիգոմատիկ իմպլանտներ: Ընդհանուր առմամբ տեղադրվել է 36 զիգոմատիկ իմպլանտ, որից 2-ը անհաջող են եղել և հեռացվել են 1 հիվանդի մոտ: Օգտագործվել են Zygoma TiUnite (Nobel Biocare, Ցյուրիխ, Շվեյցարիա) իմպլանտներ և Multi-unit (MUA) աբաթմենտներ: Իմպլտանտները տեղադրվել են

թվային եղանակով պլանավորված և պատրաստված վիրաբուժական ուղղորդիչի միջոցով: Այտոսկրերում իմպլանտների տեղադրումից հետո նրանք անմիջապես ծանրաբեռնվել են նախորոք պատրաստված թիթեղային ժամանակավոր պրոթեզներով, որոնք փորձարկումից և հարմարեցումից հետո ժամանակավոր պտուտակվել են զիգոմատիկ իմպլանտներին տիտանային հենքով: 6 ամիս հետո տեղադրվել են իմպլանտների վրա հենվող վերջնական պրոթեզները: Այս պրոթեզների քմային հատվածը իրենից ներկայացնում է առանձին միավոր և մագնիսների միջոցով միանում է պտուտակներով իմպլանտներին ամրացված պրոթեզի հիմնական մասին: Պրոթեզի քմային հատվածի անջատման միջոցով առաջացած անցքով իրականացվում է վերադիր հատվածների հյուսվածքների դիտարկում, խնամք, անտիսեպտիկ մշակում և հիգիենային ուղղված գործառույթներ (իրիգացիաներ, ողողում):

Բուժման ֆունկցիոնալ արդյունավետությունը գնահատվել է զիգոմատիկ իմպլանտների կիրառմամբ պրոթեզավորումից առաջ և հետո՝ օգտագործելով բերանի խոռոչի առողջության վրա ազդեցության պրոֆիլը (OHIP-14) և ծամողական ֆունկցիոնալ ինդեքսը: Կյանքի որակը գնահատվել է Վաշինգտոնի համալսարանի կյանքի որակի հարցաշարի 4-րդ տարբերակով (UW-QOLv4):

Արդյունքներ. Հետվիրահատական բարդություններ չեն եղել, և 7-10 օր հետո հիվանդները դուրս են գրվել հիվանդանոցից: Վիրահատությունից ընդամենը 7 օր հետո հիվանդները կարողացել են վերադառնալ նորմալ սննդակարգի (պինդ)՝ առանց որևէ ֆունկցիոնալ կամ ցավային գանգատների, բացի վիրահատության հետևանքով առաջացած մնացորդային այտուցից: Հիվանդների առողջության հետ կապված կյանքի որակը (HR-QOL) մինչև բուժումը ≥48.3% էր: HR-QOL-ը և վերականգնումից հետո կյանքի ընդհանուր որակը գնահատվել են որպես լավ համապատասխանաբար 76.8%-ով: Բոլոր դեպքերում, ծամելու ֆունկցիայի բարելավումը, նաև բուժառուների համար, ամենակարևոր նպատակն էր (մինչև իմպլանտացիան 26,4% և հետո 67,3%): Ծամելու ֆունկցիայի ցուցանիշներն աճել են իմպլանտներով օրթոպեդիկ բուժումից հետո:

Եզրակացություններ. Զիգոմատիկ իմպլանտների վրա ֆիքսված պրոթեզի օգտագործումը դիմածնոտային արատներով հիվանդների մոտ օրթոպեդիկ վերականգնման արդյունավետ մեթոդ է դիմածնոտային վիրահատությունից հետո բարդ կլինիկական դեպքերում:

ЧЕЛЮСТНО-ЛИЦЕВАЯ РЕАБИЛИТАЦИЯ БОЛЬНЫХ С НОВООБРАЗОВАНИЯМИ ВЕРХНЕЙ ЧЕЛЮСТИ С ИСПОЛЬЗОВАНИЕМ ПРОТЕЗОВ НА СКУЛОВЫХ ИМПЛАНТАТАХ

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Резюме

Цель: Целью настоящего исследования было оценить клинические результаты ортопедической реабилитации пациентов с использованием скуловых имплантатов, перенесших челюстно-лицевую операцию по поводу опухолей верхней челюсти.

Методы и материалы: В исследование включены 12 пациентов, проходивших протезную реабилитацию с использованием скуловых имплантатаов после челюстно-лицевой операции по поводу опухолей верхней челюсти в период с 2021 по 2023 годы. Среди них было 8 пациентов мужского пола и 4 пациентки женского пола, средний возраст 53,2 года. Тип опухолей определялся методами КТ, МРТ и гистопатологического исследования. Распределение образований доброкачественное - у 4 пациентов, злокачественное - у 8 пациентов. 7 пациентов получали лучевую терапию до или после удаления опухоли. Сразу после удаления опухоли были поставлены хирургические иммедиат обтураторы. После заживления ран, от 6-и до 12-и месяцев после резекции опухоли в односторонние или двусторонние скуловые кости устанавливали 1-4 скуловых имплантата. Всего установлено 36 скуловых имплантатов, из них 2 оказались неудачными и были удалены у 1 пациента. Использовалась Zygoma TiUnite (Nobel Biocare, Цюрих, Швейцария) и мульти юнит абатменты. Имплантаты были установлены с помощью хирургического шаблона, который был заранее спланирован и изготовлен цифровым методом. После установки имплантатов в скуловую кость, они сразу были нагружены предварительно изготовленными пластиночными временными протезами, которые после примерки и приспособления титановыми колпачками были временно ввинчены к имплантатам. Постоянные протезы были установлены 6 месяцев спустя. Небная часть этих протезов из себя представляет как отдельный элемент и с помощью магнитов присоединяется к основной части протеза, который прикручен к имплантатам. Через отверстие, созданное при отсоединении небной части протеза, осуществляется наблюдение, уход, антисептическая обработка и выполнение гигиенических процедур (ирригация, полоскание). Оценку функциональной эффективности лечения проводили до и после протезирования со скуловыми имплантатами с использованием профиля воздействия на здоровье полости рта (OHIP-14) и жевательного функционального индекса. Качество жизни оценивалось с использованием опросника качества жизни Вашингтонского университета версии 4 (UW-QOLv4).

Полученные результаты. Послеоперационных осложнений не наблюдалось, и через 7-10 дней пациент был выписан из стационара. Пациенты смогли вернуться к нормальной диете (твердой) всего через 7 дней после операции, без дальнейших жалоб на функционирование или боль, за исключением остаточного отека, вызванного вмешательством. Качество жизни пациентов, связанное со здоровьем (HR-QOL), до лечения составляло ≥48,3%. HR-QOL и общее качество жизни после реабилитации были оценены как хорошие 76,8% соответственно. Во всех случаях жевание также было наиболее важной функцией для пациентов (до имплантации 26,4% и после 67,3%), показатели жевательной функции увеличились после ортопедического лечения с помощью имплантатов.

Выводы: Применение протеза с фиксацией на скуловых имплантатах у пациентов с дефектами верхней челюсти является эффективным методом ортопедической реабилитации в сложных клинических случаях после челюстно-лицевой операции.