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COMPARISON OF RECONSTRUCTION OF MAXILLOFACIAL BONE DEFECTS COMPLICATED BY COVID-19

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✓ ***Resume***

In this article, scientific research on reconstruction of defects of the face-jaw area that appeared as a complication of various purulent inflammatory diseases in patients with COVID-19 is studied and several conclusions are drawn. The study was carried out at the Tashkent Medical Academy. The main attention is focused on the causes and characteristics of complications of the face and jaw area in patients, analysis of the social status of patients and methods of diagnosis and restoration of defects of the face and jaw area.

Key words: Computer-assisted design, computer-assisted manufacturing, zygoma implant, pterygoid implant, atrophic maxilla, maxillectomy.

COVID-19 ASORATI BO‘LGAN YUZ-JAG‘ SUYAKLARI NUQSONLARINI REKONSTRUKSIYALASHNI TAQQOSLASH

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✓ ***Rezyume***

Mazkur maqolada COVID-19 bilan og‘rigan bemorlarda asorat sifatida va turli yiringli yallig‘lanish kasalliklari tufayli paydo bo‘lgan yuz- jag‘ sohasi nuqsonlarini qayta tiklash to‘g‘risidagi ilmiy izlanishlar o‘rganilib bir nechta xulosalar chiqariladi. Tadqiqot Toshkent Tibbiyot akademiyasida amalga oshirilgan. Asosiy e‘tibor bemorlarda yuz- jag‘ sohasi asoratlarining kelib chiqish sabablariga, xususiyatlariga, bemorlarning ijtimoiy holati tahliliga va yuz- jag‘ sohasi nuqsonlarini tashxislash va qayta tiklash usullariga qaratilgan.

Kalit so‘zlar: Kompyuter yordamida dizayn, kompyuter yordamida ishlab chiqarish, zigoma implantatsiyasi, pterygoid implant, yuqori jag‘ atrofiyasi, maksillektomiya

СРАВНЕНИЕ РЕКОНСТРУКЦИЙ ДЕФЕКТОВ ЧЕЛЮСТНО-ЛИЦЕВОЙ КОСТИ, ОСЛОЖНЕННЫХ COVID-19

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✓ ***Резюме***

В данной статье изучены научные исследования по реконструкции дефектов челюстно-лицевой области, возникших как осложнение различных гнойно-воспалительных заболеваний у пациентов с COVID-19, и сделан ряд выводов. Исследование проводилось в Ташкентской медицинской академии. Основное внимание сосредоточено на причинах и особенностях осложнений лицевой и челюстной области у пациентов, анализе социального статуса пациентов и методах диагностики и восстановления дефектов лицевой и челюстной области.

Ключевые слова: Компьютерное проектирование, компьютерное производство, скуловой имплантат, крыловидный имплантат, атрофическая верхняя челюсть, максилэктомия.

Relevance

Reconstruction of maxillary defects is a challenging endeavor aimed at restoring both functionality and aesthetics to the midface. These defects often affect multiple components of the midface, necessitating skin coverage, bony support, and mucosal lining for a thorough restoration.

Various methods have been utilized, including computer-assisted design (CAD) and computer-assisted manufacturing (CAM) printed titanium mesh, which provide structural support in free flap reconstructions and demonstrate high reproducibility and accuracy in achieving desired aesthetic, structural, and functional outcomes. Free flaps utilizing composite tissue from the serratus anterior muscle and scapular angle have also proven effective for large maxillary defects, highlighting their adaptability for varying defect sizes. Given the maxilla's vital role in maintaining facial symmetry, midface projection, and essential functions such as mastication and speech, careful assessment, planning, and execution are crucial for effective management of these defects. Additionally, innovative techniques like utilizing leftover bone from mandibular angle ostectomy for reconstructing the maxillary buttress can yield successful results in specific cases, merging both functional and aesthetic objectives in repairing facial bone defects.

Zygoma implant reconstruction for extensive maxillary defects is a reliable, predictable, and cost-effective treatment option. Implant-supported prostheses are essential when there is a loss of soft and hard tissue, as they help support oral musculature and restore functionality. Studies have indicated that zygomatic and pterygoid implants are more successful than traditional implants for rehabilitating maxillary defects. The advent of zygoma implants has significantly improved prosthesis retention, leading to enhanced overall stability. In the current case, the maxillary defect was reconstructed using zygomatic implants, which were rehabilitated with a titanium bar-supported prosthesis. Research by Schmidt et al. concluded that combining zygomatic and standard endosseous implants can effectively reconstruct patients following extensive maxillary resections, aligning with our case report where zygomatic implants alone were employed for the maxillary defect reconstruction.

Purpose of the study: comparative analysis of reconstructions of maxillofacial bone defects complicated by COVID-19

Materials and methods

When we compared the methods and results used by several scientists in the reconstruction of maxillofacial defects, we obtained the following results.

To enhance the provided information on the reconstruction of maxillary and facial defects, I will add detailed explanations and diagrams for a better understanding of the techniques and procedures mentioned. Table No. 1.

Result and discussions

Maxillary Reconstruction Techniques

1. Computer-Assisted Design (CAD) / Computer-Assisted Manufacturing (CAM)

- Explanation CAD/CAM technology allows for precise planning and manufacturing of custom implants. In maxillary reconstruction, titanium mesh implants are often used due to their strength and biocompatibility.

Diagram:

- Diagram: A typical diagram shows the stages of CAD/CAM processes, starting from digital imaging (like CT scans) of the patient’s defect area, followed by virtual modeling of the reconstruction, and finally, the manufacturing of the custom implant (often a titanium mesh).

Table No. 1

	Insights	Results	Limitations	Methods	Conclusion
1	Maxillary defects require skin coverage, bony support, and mucosal lining;Goals include defect obliteration, functional restoration, structural support, and esthetic restoration.	Maxillary defects require skin coverage,bony support and mucosal lining Goals of maxillary reconstruction include defect obliteration and functional restoration.	Extensive maxillary defects not suitable for bony reconstruction with flaps;Local flaps in extensive defects lead to larger scars.	Flap prefabrication and prelamination techniques used in reconstructive plastic surgery;Temporalis flap for bone coverage in older patients not suitable for free-tissue transfer.	Maxillary defects require complex reconstruction involving skin, bone, and mucosa;Reconstruction goals include defect obliteration, functional restoration, structural support, and aesthetics.
2	Maxillary defect reconstructed using remnant bone from mandibular angle ostectomy.;Successful reconstruction achieved with no complications, satisfying functional and aesthetic results.	Successful reconstruction of maxillary defect using mandibular angle ostectomy remnant bone;Patient satisfied with functional and aesthetic outcomes of reconstructive surgery	Maxillary buttress defect reconstructed using remnant bone from mandibular angle ostectomy;Cosmetic surgery performed simultaneously with reduction of facial bone fracture	Technique not applicable to every patient;Remnant bone graft may not always be suitable	Successful maxillary buttress defect reconstruction using mandibular angle ostectomy remnant bone;Remnant bone of mandibular angle ostectomy can be potential reconstruction option.
3	CAD/CAM-printed titanium mesh supports free flap for maxillary reconstruction; Good reproducibility with less than 1 mm deviation in most regions.	CAD/CAM-printed titanium mesh supports free flap for maxillary reconstruction; Good reproducibility with less than 1 mm deviation in most regio	Deviation in orbital floor and alveolus most frequentReconstructive accuracy reasonably high, larger patient studies needed	Reconstruction with CAD/CAM-printed titanium mesh;Virtual planning using preoperative and postoperative CT scans	CAD/CAM titanium mesh supports free flap for maxillary reconstruction;High reconstructive accuracy achieved with this technique.
4	Free flap using serratus anterior muscle and angle of scapula;Versatile composite flap for reconstructing maxillary defects of various sizes.	All flaps successful, no aspiration, normal speech postoperatively;Two patients died from metastatic disease postoperatively.	Reconstruction of maxillary defects with serratus anterior muscle and scapula angle;Free tissue transfer for large maxillary defects in 11 patients	-	Composite flap versatile for reconstructing maxillary defects of various sizes;Free flaps preferred for large maxillary defects over other methods.
5	Prosthetic-only or surgical reconstructive solutions, often combined for reconstruction;Surgeon needs diverse flap choices and knowledge of prosthetic requirements.	Review of maxillary defect evaluation, treatment planning, and execution principles;Free flaps common for maxillary reconstruction, tailored to patient needs.	Evaluation of maxillary defect;Treatment planning and execution for defect management	Classification schema lacks stratification for oral, orbital, and malar defects.;Creating multiple small segments for reconstruction is complicated and unnecessary.	Maxillary defects require prosthetic or surgical reconstructive solutions, sometimes a combination.;Free flaps are common for maxillary reconstruction, tailored to patients' needs.

2. Free Flap Reconstruction

- Explanation* this technique uses tissue (muscle, skin, bone) from another part of the body to reconstruct the maxilla. Common donor sites include the scapula and serratus anterior muscle.

A diagram usually shows the donor site (e.g., scapula) and the harvested flap, including muscle and bone, which is then transferred to the maxillary defect site.

3. Zygoma Implants

- Explanation: Zygoma implants provide support for prosthetics in cases where traditional implants are not feasible due to extensive bone loss.

This diagram illustrates the placement of long implants anchored in the zygomatic bone, which extends to support maxillary prosthetics.

The zygomatic implants have provided an acceptable nongrafting solution for rehabilitation of atrophic maxilla. They can be used in patients with maxillary alveolar defects but with good bone quality in the body of the zygoma region. The long-term functional and esthetic outcomes of zygomatic implant supported rehabilitation has been excellent. However, some of the complications associated with zygomatic implants include risk of orbital injury, speech problems with palatal emergence, post-operative sinusitis, and oro-antral fistula. Further, a lower survival rate of zygomatic implants has been reported in patients with maxillary resection. In our experience, the cost of the patient-specifc implants rehabilitation was equivalent to the zygomatic implant supported rehabilitation[15].

4. Use of Remnant Bone from Mandibular Angle Ostectomy

- Explanation: This innovative approach involves using bone from the mandibular angle to reconstruct the maxillary buttress, providing both structural and aesthetic benefits.

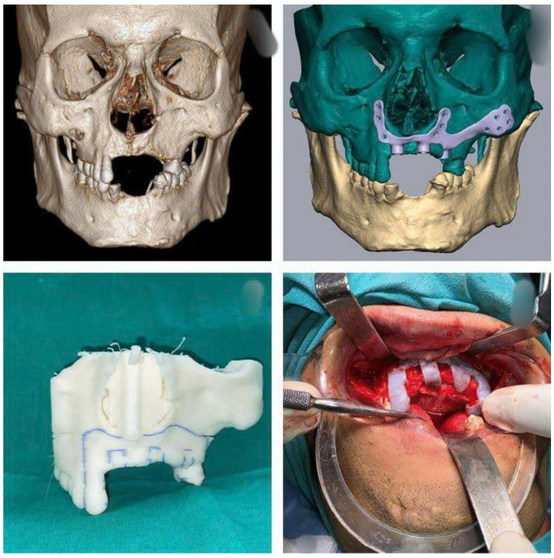

Figure: Harvesting bone from the mandibular angle for maxillary reconstruction.

Shows the mandibular angle as the donor site, the harvested bone segment, and its placement in the maxillary region for reconstruction.

•Where to Find: Search for “mandibular angle ostectomy reconstruction” in medical case studies or surgical atlases.

Practical Implications and Case Studies

1. Prosthetic Rehabilitation

Explanation Prosthetics are used to restore function and aesthetics following maxillectomy. Techniques include magnet-retained obturators and silicone prostheses for orbital defects.

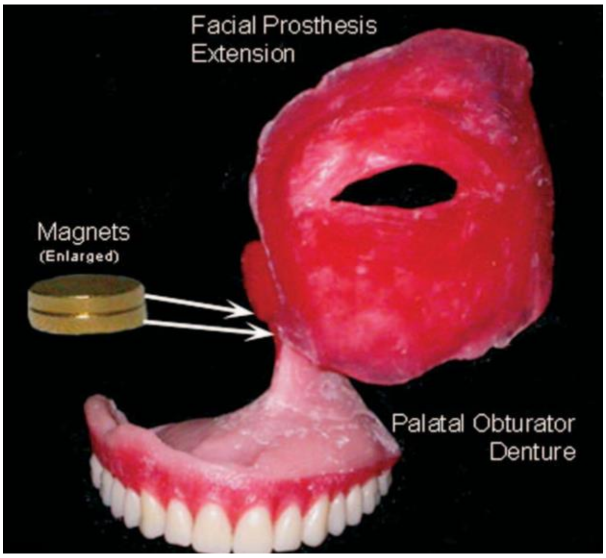

Figure: Magnet-retained prosthetic rehabilitation.

Diagram: This includes diagrams of prosthetic obturators and silicone prostheses used for facial reconstruction, often showing how they are retained using magnets or adhesives.

2. Combined Zygomatic and Pterygoid Implant

- Explanation:These implants offer enhanced stability and support for prostheses in patients with significant bone loss due to maxillectomy.

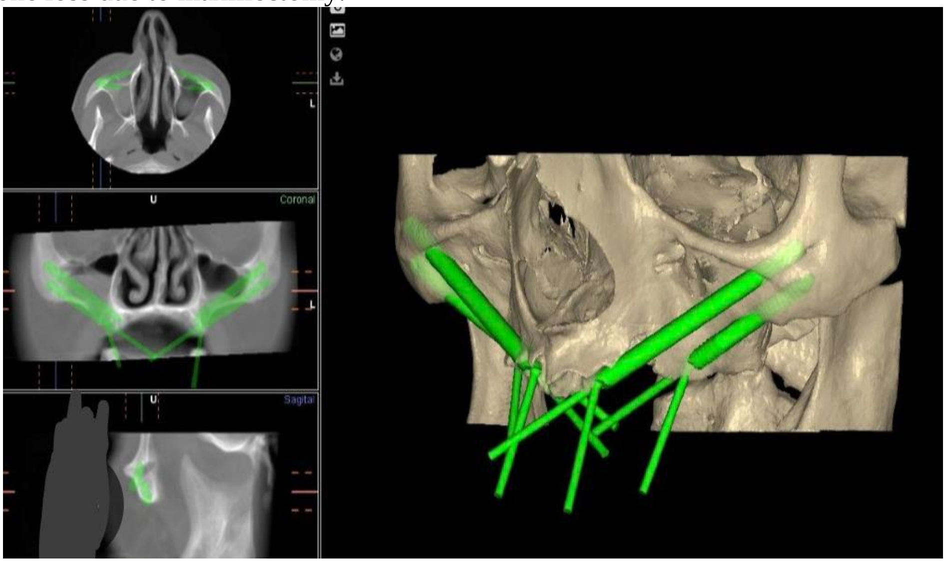
Figure: Placement of zygomatic and pterygoid implants.

Detailed Case Report

-Case: Successful reconstruction of a maxillary defect using zygomatic implants rehabilitated with a titanium bar-supported prosthesis.

-Findings The combination of zygomatic and endosseous implants provided reliable structural support and improved prosthetic retention, aligning with results from Schmidt et al. and other studies.

Conclusion

When we studied the defects in the face-jaw area, we found out that they appeared due to various reasons. We can mention these defects that appear as a result of purulent-inflammatory diseases, oncological diseases, traumas that are complications of COVID-19. in the reconstruction of defects, we considered the use of zygomatic and pterygoid implants, the use of prostheses for rehabilitation, and compared them.

LIST OF REFERENCES:

1. Very few articles in the literature have discussed the use of pterygoid/pterygomaxillary implants in patients undergoing maxillectomy. Both pterygoid implants showed successful osseointegration. (Bidra)
2. Rathee M et all. in case report describes the prosthetic rehabilitation of the patient with post-COVID mucormycosis maxillectomy and orbital exenteration using a magnet-retained closed bulb hollow acrylic obturator and room-temperature vulcanising silicone orbital prosthesis. To enhance retention, a spectacle and medical-grade adhesive were also used.
3. The patient underwent subtotal maxillectomy and was rehabilitated with an implant-supported maxillofacial prosthesis with zygomatic and pterygoid implants by following an immediate loading protocol. Gaur
4. Patel N, Mel A, Patel P, Fakkhruddin A, Gupta S. A Novel Method to Rehabilitate Post-mucormycosis Maxillectomy Defect by Using Patient-Specific Zygoma Implant. J Maxillofac Oral Surg. 2023 Mar;22(Suppl 1):118-123. doi: 10.1007/s12663-023-01847-1. Epub 2023 Feb 3. PMID: 36776348;
5. Beri A, Pisulkar SG, Mundada BP, Borle A, Dahihandekar C, Bansod A. Quad Zygoma: A Graftless Solution in Post-mucormycosis Maxillectomy. Cureus. 2023 Dec 5;15(12):e50014. doi: 10.7759/cureus.50014. PMID: 38186467; PMCID: PMC10767473.
6. Chakravarthy A, Sharma D, Vinnakota G, Ramanujam R, Chakrabarti S, Reddy D. A successfully rehabilitated post-mucormycosis maxillary defect with guided quad-zygomatic implants: A case report. Int J Case Rep Images 2023;14(2):146–154.
7. Gaur, V., Patel, K., & Palka, L. (2021). An implant-supported prosthetic rehabilitation of a patient with a bilateral subtotal maxillectomy defect secondary to rhino-orbital-cerebral mucormycosis: A clinical report of a graftless approach. The Journal of Prosthetic Dentistry. doi:10.1016/j.prosdent.2020.12.022
8. Bidra AS, May GW, Tharp GE, Chambers MS. Pterygoid implants for maxillofacial rehabilitation of a patient with a bilateral maxillectomy defect. J Oral Implantol. 2013 Feb;39(1):91-7. doi: 10.1563/AAID-JOI-D-10-00181. Epub 2011 Jan 13. PMID: 21231864.
9. Kumar L, Verma A, Pal US, Mattoo K, Algarni YA, Bin Hassan SA, Baba SM, Jeri SY, Khateeb SU. Influence of Prosthodontic Rehabilitation Using Zygomatic Implants in Covid 19 Related Mucormycosis (Rhino-Orbital-Cerebral) Maxillectomy Patients Upon Post-Operative Stress, Anxiety and Functional Impairment: A Prospective Cohort Study. Clin Interv Aging. 2023 Aug 1;18:1201-1219. doi: 10.2147/CIA.S412625. PMID: 37547381; PMCID: PMC1040404
10. Kudva A, Srikanth G, Singh A, Chitra A, Suryanarayan RK, Francis M. Reconstruction of Maxillary Defects Using Virtual Surgical Planning and Additive Manufacturing Technology: A Tertiary Care Centre Experience. J Maxillofac Oral Surg. 2024 Jun;23(3):644-652. doi: 10.1007/s12663-023-02005-3. Epub 2023 Sep 15.PMID:38911428;PMCID:PMC11190103.

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