



Zygomatic Implants: A Graftless Solution for Severe Maxillary Atrophy

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ABSTRACT

Zygomatic implants offer a reliable and graftless treatment option for patients with severe maxillary atrophy where conventional implant placement is not feasible. These long implants anchor in the dense zygomatic bone, bypassing the deficient alveolar ridge and maxillary sinus. This article provides an overview of the indications, surgical approach, prosthetic considerations, advantages, and limitations of zygomatic implants for maxillary rehabilitation.

I. INTRODUCTION

Rehabilitation of the severely atrophic maxilla is a significant challenge in implant dentistry. Traditional approaches often involve extensive bone grafting, sinus lifts, or Le Fort I procedures, all of which increase treatment time, cost, and patient morbidity.

Zygomatic implants, introduced by Brånemark in the late 1990s, provide an alternative by anchoring directly into the zygomatic bone. This technique eliminates the need for bone grafting and allows for immediate loading in many cases, restoring function and aesthetics in a shorter timeframe.

Methods (Descriptive Surgical Technique)

- Patient Assessment
- Candidates for zygomatic implants typically present with:
 - Severe posterior and anterior maxillary atrophy
 - Failed bone grafts
 - Maxillary defects from trauma, tumors, or congenital conditions

Preoperative assessment includes:

- Clinical examination
- Cone Beam Computed Tomography (CBCT) for evaluating zygomatic bone quality, sinus anatomy, and prosthetic space
- Diagnostic wax-ups or digital prosthetic planning

Surgical Procedure

- The surgery is performed under general anesthesia or local anesthesia with intravenous sedation for patient comfort.

-A crestal incision is made with possible lateral sinus wall exposure for better visualization.

-The osteotomy is prepared from the alveolar ridge (often in the premolar or canine region) angling posteriorly and superiorly toward the zygomatic bone.

-Implant lengths commonly range from 30 to 52.5 mm, depending on anatomical dimensions and manufacturer.

-The implant passes through the maxillary sinus or along its lateral wall and achieves primary stability in the body of the zygoma.



Depending on the case, placement can involve:

- Unilateral or Bilateral Zygomatic Implants: For localized posterior defects
- Quad Zygoma Concept: Four zygomatic implants used when no anterior bone is available
- Prosthetic Protocol
 - If primary stability is sufficient, immediate loading with a screw-retained provisional prosthesis can be performed within 24 to 72 hours.
 - Definitive prosthesis fabrication is done after soft tissue healing and osseointegration (typically after 4–6 months). Common prosthetic options include:
 - Metal-acrylic hybrid prosthesis
 - Monolithic zirconia prosthesis
 - Titanium-reinforced full-arch prostheses

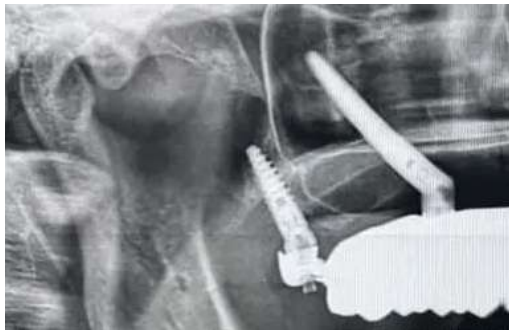
Postoperative Care

- Antibiotics, analgesics, and anti-inflammatory medications are prescribed.
- Patients are instructed on soft diet and proper oral hygiene during the healing phase.
- Follow-up appointments are scheduled at 1 week, 1 month, and then at regular intervals.



II. DISCUSSION

-Zygomatic implants provide a predictable solution for patients with insufficient maxillary bone volume. Their long anchorage in the dense zygomatic bone ensures primary stability, making immediate function possible.



-However, the technique is surgically demanding and requires advanced training and experience. Risks include sinus complications, infraorbital nerve injury, and soft tissue dehiscence. Careful planning, use of digital surgical guides, and close postoperative monitoring can help minimize these risks.

Advantages

- Avoids the need for bone grafting or sinus augmentation
- Reduces treatment time
- Immediate function often possible
- High patient satisfaction with improved aesthetics and function

Limitations

- Complex surgical technique
- Higher risk of sinus complications
- Requires specific prosthetic design considerations
- Limited to specialized surgical centers

III. CONCLUSION

-Zygomatic implants represent a life-changing treatment option for patients with severe maxillary atrophy, offering a graftless and immediate-loading solution for full-arch rehabilitation. With careful patient selection and proper surgical planning, they provide long-term functional and aesthetic success.

REFERENCES

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