Rehabilitation with zygomatic implants: A treatment option for the atrophic edentulous maxilla—9-year follow-up

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This article reports the 9-year clinical outcome of the two-stage surgical rehabilitation of a severely atrophic edentulous maxilla with a metal-resin fixed denture supported by implants anchored in the zygomatic bone and the maxilla. After clinical and radiographic examination, zygomatic implants were inserted bilaterally and four standard implants were placed in the anterior region of the maxilla. Six months later, the implants were loaded with a provisional acrylic resin denture, and the definitive implant-supported metal-resin fixed denture was provided 1 year after implant placement. After 9 years of follow-up, no painful symptoms, peri-implant inflammation or infection, implant instability, or bone resorption was observed. In the present case, the rehabilitation of severe maxillary atrophy using the zygomatic bone as a site for implant anchorage provided good long-term functional and esthetic results. Therefore, with proper case selection, correct indication, and knowledge of the surgical technique, the use of zygomatic implants associated with standard implants offers advantages in the rehabilitation of severely resorbed maxillae, especially in areas with inadequate bone quality and volume, without needing an additional bone grafting surgery, thereby shortening or avoiding hospital stay and reducing surgical morbidity. (Quintessence Int 2010;41:9–12)

Key words: atrophic maxilla, dental implants, zygomatic bone, zygomatic implants
CASE REPORT

A 46-year-old man sought treatment in 2000 complaining of the lack of stability and poor esthetics of his maxillary complete denture, which caused difficulty in wearing, nausea, and great dissatisfaction. The intra-oral clinical examination revealed a totally edentulous maxilla with a thin residual alveolar bone ridge. The panoramic radiograph revealed severe atrophy in the posterior region of the maxilla bilaterally (Fig 1).

Under general anesthesia, zygomatic implants were inserted bilaterally, and four standard implants were placed in the anterior maxilla, with final torque values above 45 N/cm (Fig 2). An acrylic resin guide was fabricated to orient implant insertion, the registration of the occlusal relationship, the emergence profile, and the biomechanics of the future fixed denture. Then, cover screws were placed over the implants, the mucoperiosteal flap was repositioned and sutured, and the patient was discharged. The sutures were removed 1 week after the surgical procedure, and monthly appointments were scheduled to evaluate the periodontal conditions and perform occlusal adjustments. The patient’s complete denture was adjusted and relined with soft material, and he wore it during the postoperative course. After 6 months, the cover screws were removed, and healing abutments were connected to the implants and tightened appropriately. The definitive metal-resin fixed denture with a nickel-chromium bar was screwed to the implants 1 year after the first surgical stage.
The patient has been followed for 9 years, and annual clinical, radiographic, and computed tomography (CT) controls have been undertaken. At all visits, the denture was removed for cleaning and the quality of the soft tissues and implants verified. No signs of peri-implant mucosa inflammation/infection or implant instability were observed. Pain was not reported at any of the follow-up visits. Panoramic radiographs, CT scans, and a 3D reconstruction of the skull did not show bone resorption processes or maxillary sinus pathologies (Figs 3 to 5).

**DISCUSSION**

In the present case, the patient was not satisfied with his oral condition, especially the poor esthetics and discomfort caused by an ill-fitting denture on his severely resorbed maxilla. This type of complaint is frequent among patients with severe maxillary atrophy who do not present sufficient bone volume for insertion of implants. During case planning, the possible treatment modalities for rehabilitation of the severe maxillary atrophy—reconstruction with autogenous bone grafts from an extracranial donor area before implant placement, palatine approach, tilting implants, and zygomatic implants—were discussed with the patient. The decision to use zygomatic implants along with regular implants in the maxilla was made based on clinical and
radiographic examinations and considering the patient’s choice.³

Immediate loading was not used in this case because at the time of implant surgery, there were no long-term studies investigating the behavior and survival of zygomatic implants subjected to immediate loading, and most conclusions derived from case reports.⁴⁻⁶ More recently, the placement of immediately loaded zygomatic implants is guided and facilitated by use of computer-assisted 3D and rapid prototyping planning,⁵ which offers a better treatment perspective in the rehabilitation of the severely atrophic maxilla.

Reported complications associated with zygomatic implants include postoperative sinusitis, oroantral fistula formation, periorbital and conjunctival hematoma or edema, lip lacerations, pain, facial edema, temporary paresthesia, epistaxis, gingival inflammation, and orbital penetration. In some cases, although there is loss of bone structure, it is suitable for the removal of zygomatic implants. The placement of zygomatic implants associated with standard implants in the anterior region of the maxilla is a viable alternative to maxillary reconstruction with autogenous bone grafts and facilitates the rehabilitation of patients with severely atrophic maxillae, substantially reducing surgical morbidity and treatment duration compared to bone grafting.

REFERENCES


