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Zygomatic implant placement in conjunction with sinus bone grafting: the "extended sinus elevation technique." A case-cohort study

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ABSTRACT

In case of edentulous patients with an extremely atrophied maxilla, the implant-prosthetic rehabilitation represents a challenge for clinicians. As a matter of fact, the progressive bone resorption in the posterior region, the widening of the sinuses and the anterior alveolar bone resorption can dramatically reduce the possibility to perform a standard implant-prosthetic treatment. The introduction of the zygomatic implants made it possible for clinicians to perform immediate implant placement without bone augmentation for the treatment of such patients. However, although zygomatic implant insertion may have a number of advantages, existing clinical data have shown that the placement of zygomatic implants increases the risk of postoperative complications related to the sinus. The purpose of this cohort study was to introduce a modified surgical technique for the placement of zygomatic implants aiming to minimize the risk of biologic complications. The selected 10 patients, all with an extremely atrophied maxillae, were planned to be treated with one to four zygomatic implants in conjunction with sinus bone grafting. After the integrity of the sinus membrane was confirmed, the established sinus cavity was augmented with a bone graft material (OsteoBiol® *mp3*®, Tecnoss®, Giaveno, Italy) and the augmented area was covered with a resorbable barrier membrane (OsteoBiol® *Soft Cortical Lamina*, Tecnoss®) to prevent soft tissue ingrowth into the sinus and to enable guided bone regeneration. Fixation pins (TitanPin, Geistlich) were used when collapse of the barrier membrane was expected and a second barrier membrane (OsteoBiol® *Evolution*, Tecnoss®) was applied on top of the first membrane to allow optimal soft tissue integration. Implants were inserted after the bone grafting procedure. After 6 months after from the implant insertion, all patients received the definitive prostheses and underwent clinical and radiographic examinations. The overall 6-month implant survival rate was 90,9% for zygomatic implants and 100% for auxiliary implants placed in the anterior area and the clinical indicators, such as probing pocket depth, keratinized tissue and plaque and bleeding indices, were good in all patients. The radiographic examinations showed a substantial gain of radiographic bone around the zygomatic implants.

CONCLUSIONS

The findings of this cohort study demonstrate that the proposed "extended sinus elevation technique" to place zygomatic implants in conjunction with sinus bone grafting may decrease the risk of biologic complications, in contrast with traditional zygomatic implant placement, reducing sinus-related symptoms and complications, avoiding the exposure of implant threads in the maxillary antrum and improving biomechanical properties of the prosthesis.

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