

luxtasinusal zygomatic implantology: a case report

Emma Grecchi¹, Francesco Grecchi²

¹Maxillofacial and Odontostomatology Unit, IRCCS Fondazione Ca' Granda, Ospedale Maggiore Policlinico, Milan, Italy

²Department of Maxillo-Facial Surgery, Istituto Ortopedico Galeazzi, Milan, Italy

The placement of zygomatic implants, usually inserted through the maxillary sinus and apically stabilized in the zygomatic bone, has proven to be an effective option in the management of severe atrophic edentulous maxilla during the last two decades. Zygomatic implants can be considered a very important alternative in rehabilitating atrophic jaws in order to avoid bone grafting plus standard implants insertion.

This procedure was firstly introduced by Brånemark et al. in 1998 to rehabilitate the masticatory and the aesthetic functions in severe atrophied maxilla caused by trauma, congenital conditions, tumour resections or increased sinus pneumatisation. Given the high success rate reported in literature for ZY placement, this surgical technique can be considered a valid alternative to bone augmentation and invasive surgery to restore function and improve the aesthetic result for patients with atrophic edentulous maxilla. ZY, in fact, were subsequently used to rehabilitate severe atrophic upper jaws, classes V and VI, according to Cawood and Howell classification of edentulous jaws.

Since the description of the classical surgical technique in 1998 new surgical procedures

and improvements have been developed in those years.

Extremely absolute contraindications to the placement of zygomatic implants are acute sinus infections, maxillary or zygomatic bone pathologies and underlying uncontrolled or malignant systemic disorders. Relative contraindications are chronic infections of the maxillary sinus and smoking more than 20 cigarettes a day. Zygomatic implants placement in patients that use bisphosphonates is to this day debated. A maxillary sinus with any pathology should preferably be treated before or during surgical procedures to avoid post-surgical complications. Noris Medical recently produced a new surgical system and it represents an important evolution and improvement of the previous techniques and systems both in the technical-operative procedures and in the eradication of the critical post-operative sequelae due to the intrasinus path of the zygomatic fixtures. The surgical technique used for zygomatic implants placement considers the use of implant with a specific design: Noris Medical Zygomatic implant has an unthreaded long body ending with a particularly aggressive thread at the apical part of the implant. The ZY is anchored in the zygomatic bone with the conical threaded apical segment: the resulting torque, by virtue of the apically threaded 12.5 millimeters, is extremely high. The implant is placed following the procedures of the extramaxillary protocol, which is a successive modification of the traditional Brånemark technique. In the extramaxillary approach a bypass of the maxillary sinus is made in order to prevent any damage to the sinus membrane and to avoid

post surgical sinus sequelae. The implant prosthetic platform is therefore shifted buccally to a more appropriate position of the emergence close to the alveolar crest, a less bulky restoration, a better designed prosthesis and less discomfort for patients. A special design of the drills have been made in order to allow the clinicians to create a clean and safe tunnel preparation with minimal risk of damaging the sinus membrane. An angled Multi-Unit abutment from 17° to 60° will then provide the correction of the emerging angle needed.

According to the different severity of atrophic jaw and to the residual alveolar bone in the front maxilla, there are different possibilities of rehabilitations. The placement of four zygomatic implants is suggested to those patients with severe atrophies; if the premaxilla residual bone allows the placement of three or more traditional implants, a mixed rehabilitation with two ZY and traditional fixtures is suggested.

We present now a clinical case.

A 60-year-old Caucasian female patient with total edentulous maxilla (2.8 in bone inclusion) referred to our office in order to rehabilitate the masticatory function with fixed dental prosthesis.

The patient refused any grafting procedures prior to implant placement, like onlay bone grafting and/or sinus lift. She had no history of pathologies that could contraindicate surgical intervention. It was decided to perform a quad-zygoma implant rehabilitation with one traditional implant in the maxillary midline in correspondence of the anterior nasal spine.

Pre operative radiographic examination, including orthopantomograms and computed

tomography, were examined to evaluate the bone volume of the maxilla and of the zygomas and to eliminate the risk of undiagnosed pathologies. An advanced vertical and horizontal bone loss of the alveolar ridge was revealed and there was no evidence of other pathologies that could exclude surgery.

The surgery procedures were performed under general anesthesia with endotracheal intubation reinforced with local infiltration of anesthesia with vasoconstrictor.

A slight incision was made in the maxillary alveolar crest from the first molar right region to the left one with two posterior vestibular releasing incisions. A mucoperiosteal flap was raised simultaneously bilaterally along the whole incision to expose the outer surface of the malar region. Two corticotomies of the anterolateral wall of the sinus were performed with a round diamond bur to determine two marking points, then connected to the intraoral emergence of the zygomatic implant earlier determined using zygomatic burs for groove preparation (**fig. 1**). A gentle inward shift of the Schneiderian membrane with a sinus periosteal was carried out. The zygomatic bone preparation, where the apex of the zygomatic implant will be placed and anchored, was performed with a sequence of drills (**fig. 2**). This procedure was firstly performed for the anterior zygomatic implant, then for the posterior one. Four zygomatic implants and a traditional implant were placed (**fig. 3, 4**). The patient received an immediate loading provisional prosthesis, and after 4 months, a definitive prosthesis was then delivered (**fig. 5, 6**). ■

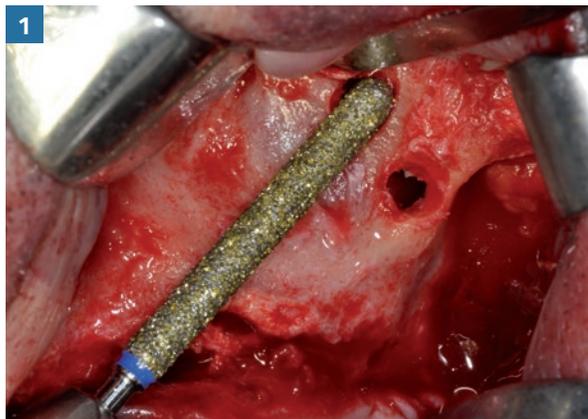


Fig. 1 The anterolateral sinus wall is prepared from the marking point to the planned oral emergence of the zygomatic implant with the coarse zygomatic bur



Fig. 2 The first zygomatic implant is placed using an extraoral screwdriver

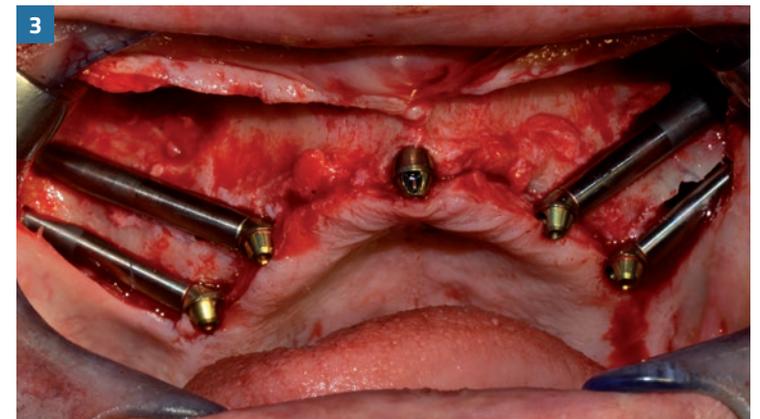


Fig. 3 The final result after placing four zygomatic implants and a traditional fixture

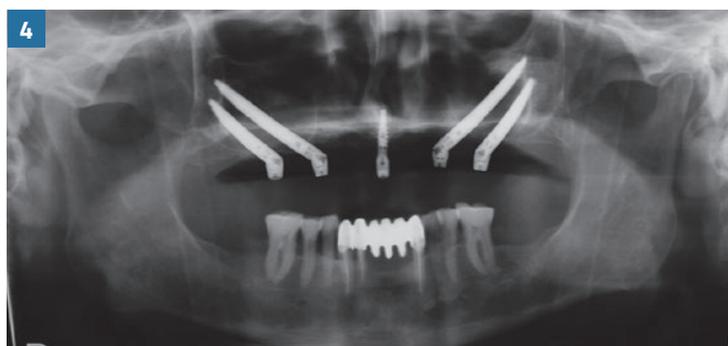


Fig. 4 Post surgery panoramic radiograph



Fig. 5 The definitive prosthesis of the patient



Fig. 6 The smile of the patient after the complete oral rehabilitation