

Immediate rehabilitation of a **completely edentulous** maxilla

Combining regular and zygomatic implants

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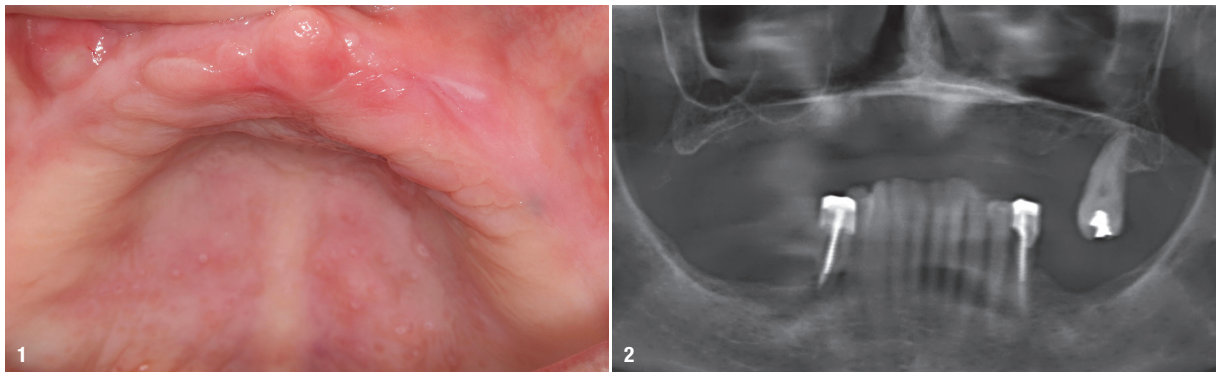


Fig. 1: Initial situation (after third molar extraction). **Fig. 2:** Panoramic radiograph.

Initial situation

A 66-year-old female patient presented to the dental office of the author complaining about her partial denture (she had one remaining natural tooth), which was unstable, caused discomfort and had a poor aesthetic appearance. This denture had been in place for 20 years and had been deficient for more than 15 years.

The patient was a non-smoker and healthy and did not take any medication. The soft tissue was quantitatively and qualitatively in good shape (Fig. 1). There were no molars in the mandible. The panoramic radiograph showed a lack of bone in the posterior of the maxilla (Fig. 2).

Treatment planning

The CBCT scan showed remaining bone in the canine region on both sides and confirmed a lack of bone in the posterior of the maxilla on both sides. The remaining tooth (a third molar) was planned to be removed on the left side, as well as a small piece of root under the mucosa (Figs. 3–5). It was decided to place two regular implants in the anterior area, combined with two Straumann zygomatic implants (one on each side), in order to provide the patient with a complete screw-retained fixed restoration immediately after the surgery. The anatomical situation in the posterior area was classified ZAGA 1/2, and thus two round zygomatic implants were to be inserted. The main advantages

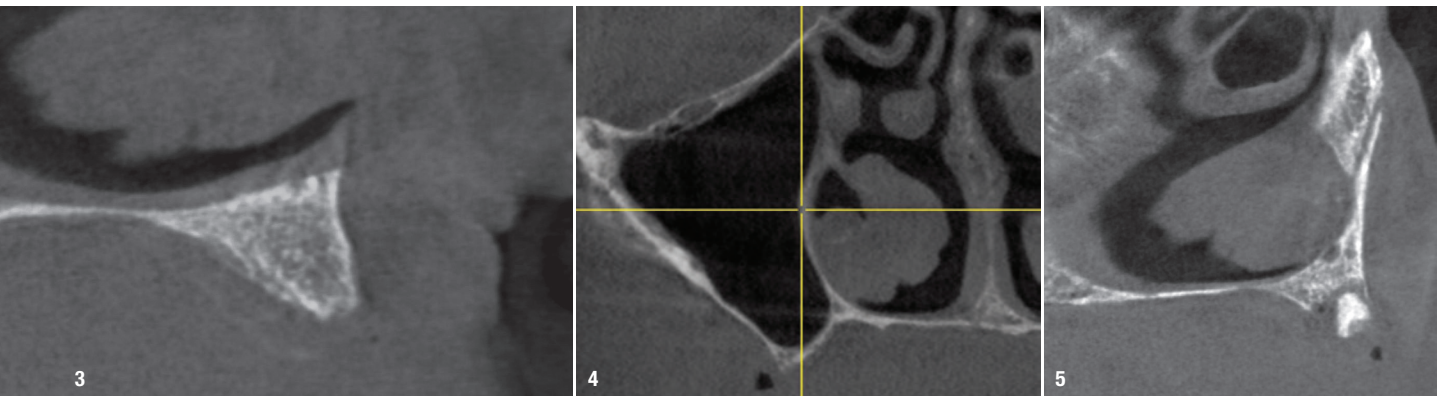


Fig. 3: CBCT scan showing remaining bone. **Fig. 4:** CBCT scan showing the right side. **Fig. 5:** CBCT scan showing the left side with a remaining root piece.

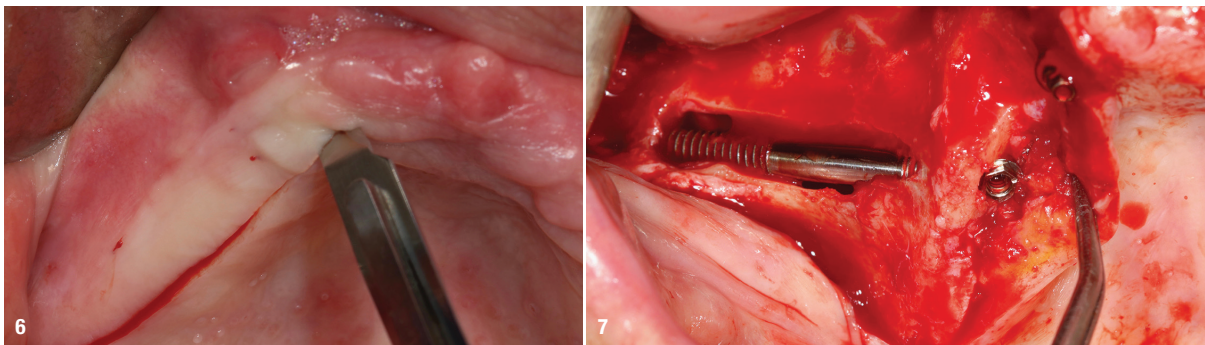


Fig. 6: A large incision was made. **Fig. 7:** Zygomatic implant on the right side.

of this type of implant is that the small-diameter rough surface at the apex of the implants leaves enough space available and the machined threaded part underneath the abutment permits excellent initial stability, which is decisive for performing immediate loading securely.

Surgical procedure

The procedure was conducted under local sedation. The surgery was performed in two phases, first on the right and then on the left side, in order to decrease the time of bone exposure to the environment. This is known to facilitate short-term healing by decreasing swelling. A large incision was made, slightly on the palatal side from the top of the crestal bone, in order to easily dispose the keratinised tissue around the abutment at a later time (Fig. 6). The incision was made starting from the distal part of the tuberosity up to the incisive papilla. An Anthogyr Axiom PX implant (diameter: 3.4 mm;

length: 10.0 mm) was placed in the canine region to an insertion torque of 40 Ncm, allowing for immediate loading. A regular multi-unit abutment (gingival height: 1.5 mm; diameter: 4.8 mm; Anthogyr) was screwed on the top to 25 Ncm and covered with a healing cap. For placement of the zygomatic implant and in accordance with the ZAGA 1/2 classification, a long window was created at the anterior wall of the sinus in order to place the head of the zygomatic implant as close as possible to the remaining alveolar crest. This improves comfort for the patient and allows for easier cleaning procedures in the future. The classical drilling procedure, using a round bur and a single drill, was performed, and the implant (ZAGA round Straumann zygomatic implant; length: 40 mm; Institut Straumann) was inserted and tightened to 50 Ncm (Fig. 7). It is important to note that the head of the implant must be fully surrounded by bone, which provides two major advantages: a high level of initial stability and better gingival health, preventing future inflammation.

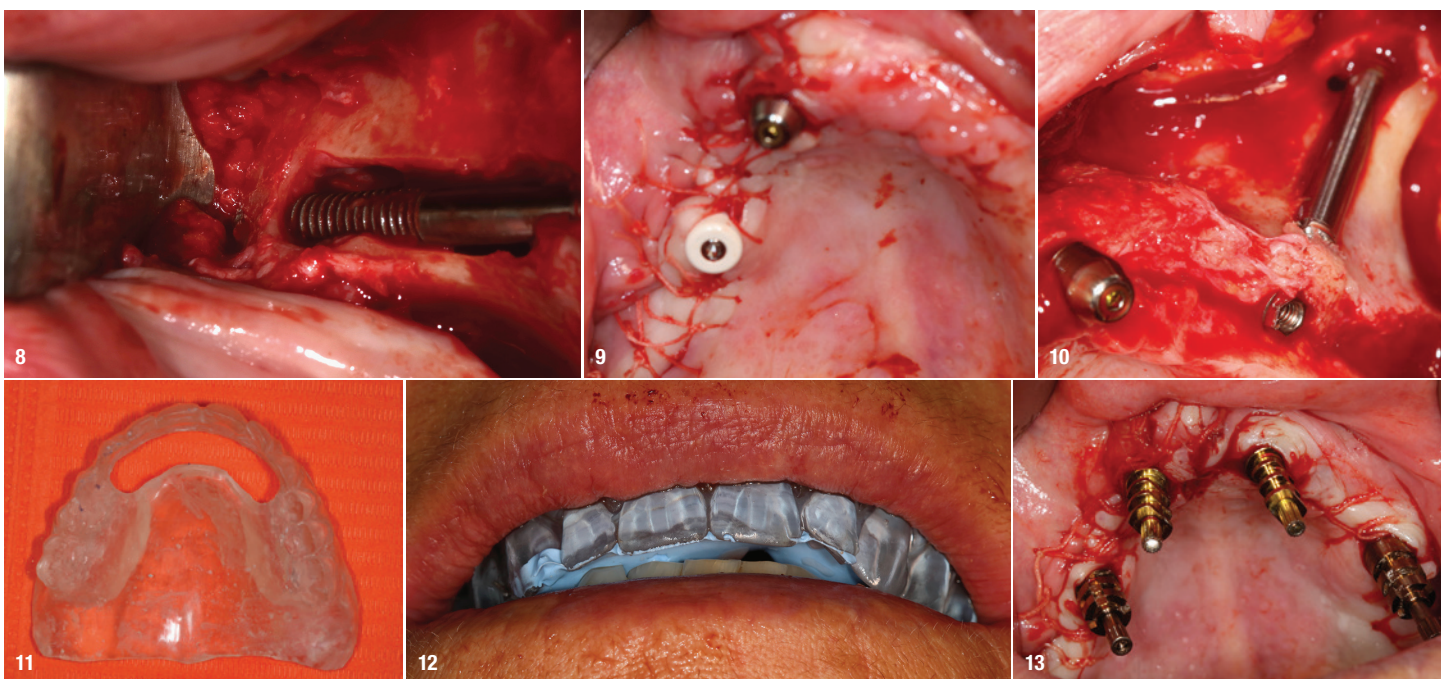


Fig. 8: Note the emergence of the zygomatic implant. **Fig. 9:** Sutures. Note the keratinised tissue around the implant. **Fig. 10:** Zygomatic implant on the left side. **Fig. 11:** Resin occlusal rim with anterior window. **Fig. 12:** Occlusal registration. **Fig. 13:** Transfer copings screwed in place.



Fig. 14: Template filled with occlusal registration paste used to transfer the model to the articulator. **Fig. 15:** Note the convex shape of the bridge. **Fig. 16:** Frontal view. **Fig. 17:** Clinical situation 3 hours post-op. **Fig. 18:** The patient's new smile. **Fig. 19:** Control dental panoramic tomogram.

Another important parameter for surgical success is the ability to visualise the emergence of the apex of the zygomatic implant at the buccal face of the zygomatic bone. Thus, the surgeon can be sure that the implant is properly in place (Fig. 8). A Straumann multi-unit abutment (gingival height: 1.5mm; Institut Straumann) was placed, tightened to 35Ncm and covered with a healing cap. Resorbable sutures were used to close the flap, and particular attention was paid to the soft-tissue management around the abutment, resulting in a thick amount of keratinised gingiva around the abutment (Fig. 9). The second phase of surgery followed the same pattern: a regular implant placed in the anterior (Anthogyr Axiom PX implant; diameter: 3.4mm; length: 10.0mm; multi-unit abutment; gingival height: 1.5mm; diameter: 4.8mm) and a second ZAGA round Straumann zygomatic implant of 40mm in length with a 1.5mm multi-unit abutment placed posteriorly. As for the right side, the anatomical situation (ZAGA 1/2) allowed for the placement of a cervical emergence close to the top of the bone crest with surrounding bone around the implant (Fig. 10). The initially elevated flap was closed with resorbable sutures.

Prosthetic procedure

At the second appointment, an aesthetic try-in was validated by the patient in order to obtain her agreement on the shape and shade of the teeth. This enabled the manufacture of a translucent resin occlusal rim by simple duplication of the try-in (Fig. 11). This approach authorised the occlusal registration, by filling the resin occlusal rim with occlusal registration paste (JET BLUE BITE, COLTENE; Fig. 12) to stabilise it, before placing the material between the two jaws. The exact positions of the implants were registered with a plaster impression, using screwed transfer copings and an open tray (Fig. 13).

Laboratory procedure

The master model was cast in plaster and mounted on a semi-adjustable articulator by means of the template (Fig. 14). The pre-existing acrylic bridge was connected to the temporary titanium cylinders, previously covered with silane

to improve the adhesion of the PMMA to the titanium. The bridge must be smooth and convex in all directions (Fig. 15). This hinders plaque retention and eases hygienic maintenance, both parameters which contribute greatly to the long-term prosthetic success (Fig. 16). Approximately 3 hours after the surgery, the bridge was screwed in place, the occlusion was controlled and the ability of the patient to reach every part of it with an interproximal brush was confirmed (Fig. 17). Follow-up instructions regarding mastication (to avoid hard food and eat only what can be cut with a fork) were given, and four appointments were scheduled to double-check the healing process. The patient was invited to show her new smile, and she expressed a high level of initial satisfaction (Fig. 18). A control panoramic radiograph was performed, which confirmed the accurate placement of the implants and superstructure (Fig. 19).

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about the author



Dr Jean-Baptiste Verdino is a French dentist who graduated from Aix-Marseille University in France in 1985. He currently runs an exclusive private practice in Hyères in France specialising in implant dentistry. In addition, he is an internationally published author with a specific interest in zygomatic implants.

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