

Case Report

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Rehabilitation of an Extremely Atrophied Mandible with Cortical Plates

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ABSTRACT

A 74-year-old woman presented in our dental practice with severe loss of alveolar bone and soft tissue without any apparent systemic pathology contributing to her dental conditions. She had a complete removable prosthesis supported with a four locaters system. Unfortunately, two of the four supporting implants were failed. The patient wanted a fixed prosthesis. The treatment plan was to use the remaining implant with an additional axial implant and two cortical plates (Victory ®) followed by implant placement. The implants and plates were immediately loaded with a screw-retained prosthesis made with Znatex frame (Victory Implants ®) and resine.

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Case presentation

A fit-and-well 72-year-old woman with no significant pathology presented in our practice. The maxilla was reconstructed with several bridges and dental implants; the mandible was extremely atrophied with removable prosthesis supported by dental implants with locaters system (figure 1,2).

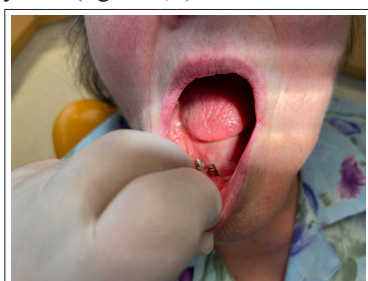


Figure 1



Figure 2

The patient's main complaint was the mobility of the mandibular prosthesis, which prevented the patient from having normal functions of chewing and speech.

The high mobility caused by the absence of the posterior ridge failed two of the four implants supporting the locator's system the patient had before.

Preoperative diagnostic and treatment plan

The CT scan showed two integrated Osteotite ® certain implants in the anterior area of the man-dible; it also showed a limited bone height in the posterior zone of the mandible (an average of 2 mm). Implant placement in this region is practically impossible due to the significant ridge resorp-tion (Figure 3,4 & 5); horizontal bone augmentation procedures are often tricky and offer an unpredictable result [1].

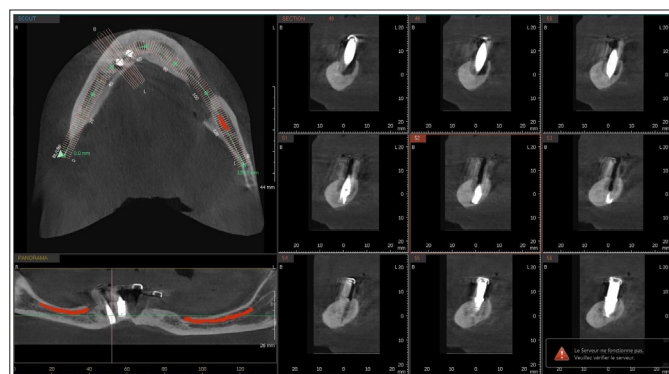


Figure 3

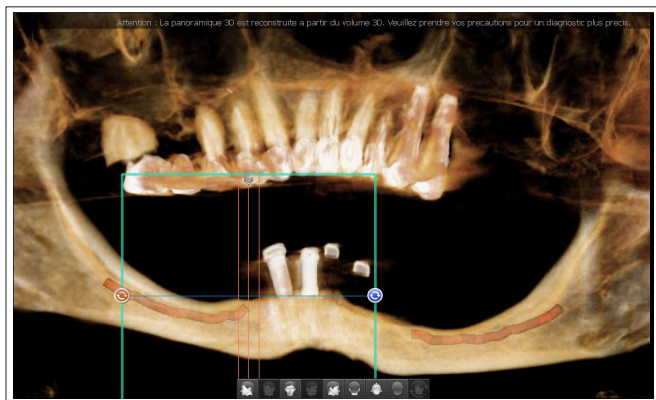


Figure 4



Figure 5

Victory is a French company of Design, Manufacture, and Distribution of Anatomical Dental Im-plants created in 1984 and offers a wide range of implant systems allowing the management of a wide variety of clinical cases - even the most complex - without prior bone grafting. Victory is also the world leader in basal implantology.

Cortical plates by Victory® are made of one piece of solid titanium without any welds or added parts; the high fatigue strength of the plate is particularly indicated for mechanically demanding situations such as in the canine and zygomatic region of the maxilla and the mandibular ramus.

A severely atrophied mandible presents limitations for conventional implant placement [1-3, 8, 14]. Various anatomical reasons limit the use of the conventional implant for restoring some edentulous spaces [2-4, 11]. In these situations, an alternative implant system that circumvents the limitations of the conventional implant for the restoration of such cases is required. Various implant systems such as eposteal, subperiosteal, endosteal, mini and zygomatic implants, plus various re-regenerative grafting procedures are many current possible options for the management of atrophic jaws [2-4]. In spite of these many options, in the case of this patient with severe atrophic jaw the current treatment options are not valuable.

Treatment Plan: From a prosthetic point of view, the patient desired a fixed prosthetic solution; a combination of two cortical plates, one narrow implant combined with the two existing implants was proposed.

This treatment plan requires no graft, no nerve displacements, avoid lengthy repeated surgeries and extended treatment time for the patient [5, 6]. The patient agreed to this treatment plan. The implants and plates are to be immediately loaded with a screw-retained prosthesis a few days after the surgery.

Presurgical preparation

The dental model was prepared to perform a presurgical study and to plan the final prosthesis.

A digital impression was made for the upper jaw, the lower jaw and the patient occlusion with the lower prostheses in the mouth. It was impossible to take an impression of the ridge mandible, neither with impression materials nor with a digital camera (3 Shape ®), we made a digital reproduction of the mandibular ridge by copying the existing removable prosthesis and producing the mandibular ridge by matching the lining on the prosthesis (Figure 6).

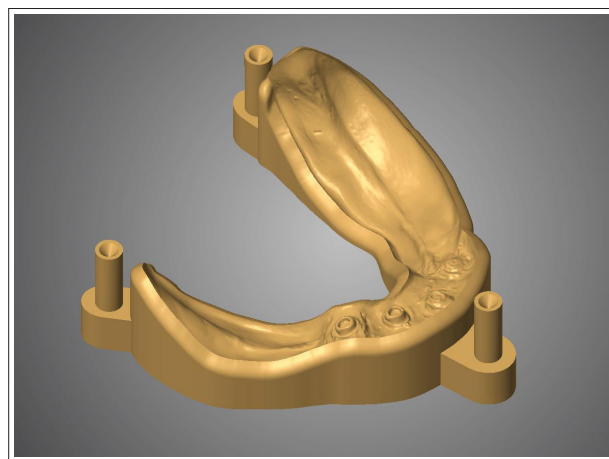


Figure 6

Both digital impressions combined allowed the dental technician to replicate the patient occlusion (Figure 7, 8). The reproduced dental occlusion was validated in the patient mouth before the surgery.

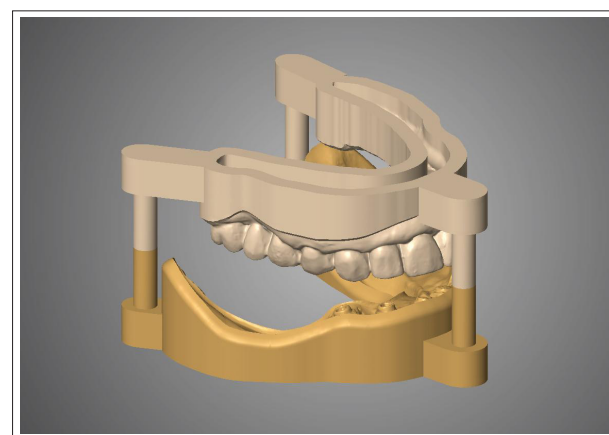


Figure 7



Figure 8

Implant Surgery

At surgery, an open flap was made from the right side of the mandible starting on the anterior border of the ramus along the crest till the canine region; a sagittal release incision is made to reduce the tension of the labial flap, the flap was reflected on the vestibular side (Figure 9).



Figure 9

Cortical plates were adapted to the exposed mandibular bone form (figure 10) and fixed with osteosynthesis screws on the mandibular basal bone; screw positions were carefully chosen to avoid any mandibular nerve damage (Figure 11, 12). The flap was then closed on with polytetra-fluoroethylene polymer (PTFE) monofilament non-absorbable suture. The procedure was quite similar for the left side.

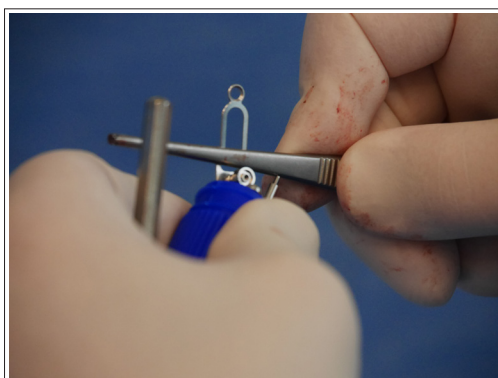


Figure 10



Figure 12

A narrow axial implant Fratex (Victory®) was also placed in the lower left canine area (Figure 13).



Figure 13

Final restoration

An impression of the upper and the lower jaw was made and sent to the dental technician, who has already the recorded patient occlusion. The frame of the final prosthesis is made of Zantex® from Intralock®, Zantex is a metal-free suprastructure material that is lightweight and extremely strong.

No framework trial was achieved thanks to the presurgery preparations, and the patient received her screw-retained Zantex-acrylic bridge six days after the surgery (Figure 14, 15 & 16).



Figure 14



Figure 15



Figure 16

Discussion

The presented case report describes the surgical and prosthetic protocol for a functional restoration of an edentulous patient with a significantly atrophied mandible.

While rehabilitation with traditional implant systems for such a case takes several months to be completed, the cortical plates allowed us to achieve the same result in few days without any additional surgeries (Bone grafting and augmentation, etc.).

Conflict of interest

The authors have no conflict of financial interest.

References

1. McAllister BS, Haghighat K (2007) Bone augmentation techniques. *J Periodontol* 78: 377-396.
2. Ali SA, Karthigeyan S, Deivanai M, Kumar A (2014) Implant rehabilitation for atrophic maxilla: a review. *J Indian Prosthodont Soc* 14: 196-207.
3. Bosse LP, Taylor TD (1998) Problems associated with implant rehabilitation of the eden-tulous maxilla. *Dent Clin North Am* 42: 117-127.
4. Candel E, Penarrocha D, Penarrocha M (2012) Rehabilitation of the atrophic posterior maxilla with pterygoid implants: a review. *J Oral Implantol* 38: 461-466.
5. Sjostrom M, Sennerby L, Nilson H, Lundgren S (2007) Reconstruction of the atrophic edentulous maxilla with free iliac crest grafts and implants: a 3-year report of a prospective clinical study. *Clin Implant Dent Relat Res* 9: 46-59.
6. Ugurlu F, Yildiz C, Sener BC, Sertgoz A (2013) Rehabilitation of posterior maxilla with zygomatic and dental implant after tumor resection: a case report. *Case Rep Dent* 2013: 930345.
7. Esposito M, Grusovin MG, Willings M, Coulthard P, Worthington HV (2007) The effectiveness of immediate, early, and conventional loading of dental implants: a cochrane systematic review of randomized controlled clinical trials. *Int J Oral Maxillofac Implants* 22: 893-904.

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