

Horizontal ridge augmentation (HRA) for mandibular defect using autogenous bone, demineralized porcine xenograft and peritoneal collagen membrane.

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Introduction

The patients' requests for fixed rehabilitation supported by implants have led to the treatment of various degrees of atrophy. Since the time of implant-prosthetic planning, there have often been bone defects in height and/or thickness. To date, several methods which are able to regenerate atrophic alveolar ridges have been proposed. The aim of this study was to treat a horizontal mandibular defect with the use of a horizontal ridge augmentation (HRA) using autogenous bone, demineralized porcine xenograft and peritoneal collagen membranes.

Case description

A 54-year-old ASA one female patient with partial mandibular edentulism with horizontal bone defect was enrolled and treated according to the study protocol.

After performing anesthesia and trapezoidal incision, a full-thickness flap was delicately elevated buccally and lingually, in order to avoid flap laceration or perforation. Next, the mental nerve was gently isolated and the two flaps were passivated and released. The cortex was then perforated in order to increase the vascular supply at the surgical site; 50% autogenous bone, harvested from the external oblique ridge of the mandibular ramus using a bone scraper (Safescraper, Meta; De Ore srl, Verona, Italy), it was mixed with 50% high porosity porcine xenograft (Z-core, Osteogenics Biomedical, USA; De Ore srl, Verona, Italy) and with peripheral venous blood of the patient. Finally, a porcine peritoneal collagen membrane (Z-matrix, Osteogenics Biomedical, USA; De Ore srl, Verona, Italy) was packed with the mix described above. It was fixed by pins and after having evidence that the surgical flaps could advance coronally without tension to cover the augmented area, a double suture (Cytoplast, PTFE sutures, Osteogenics Biomedical, USA; De Ore srl, Verona, Italy) was performed to ensure primary closure of the surgical wound. Horizontal mattress sutures were used for flap overlapping, whereas multiple interrupted sutures were used for hermetic closure of the flaps.

After approximately 6 months, an orthopantomography and a CBCT were taken and the implant-prosthetic planning was performed. Therefore, the surgical site was reopened, implant sites were prepared according to the manufacturer's protocol and two threaded tapered implants (Osseotite, Biomet 3i - Zimmer, Biomax, Vicenza, Italy) were inserted in sites 46 and 47 with a torque of 25 Nmc and submerged by 0.5 mm. Finally, a connective tissue graft was taken from the maxillary tuberosity, it was positioned over the implants and double layer suture was performed.

Results and Conclusions

Thanks to GBR approach, it was possible to satisfy the patient's request for a fixed prosthesis and allow the clinician to position the implants in an ideal prosthetically guided implant position, as confirmed by postoperative radiographs. Thanks to the connective tissue graft, it was possible to obtain an adequate quantity and thickness of keratinized tissue. This case report suggests that bone augmentation using autogenous bone, demineralized porcine xenograft and a peritoneal collagen membrane could be suitable for restoration of horizontal bone defects in the posterior mandible.

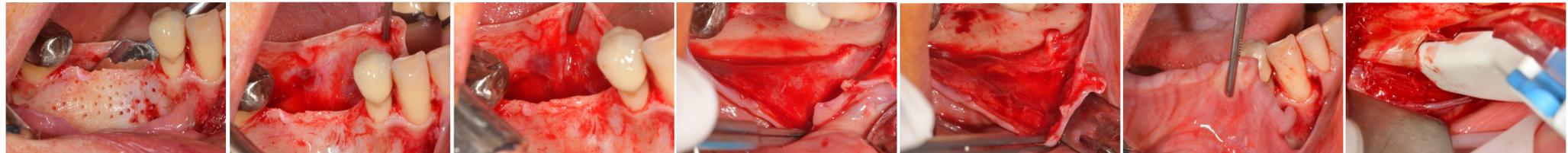
Pre-operative clinical and radiographic conditions



Skeletonization of alveolar ridge



Releasing incisions and mobilization of surgical flaps



50:50 mixture of autogenous bone and porcine xenograft added by peripheral venous blood



Stabilization of porcine peritoneal membrane

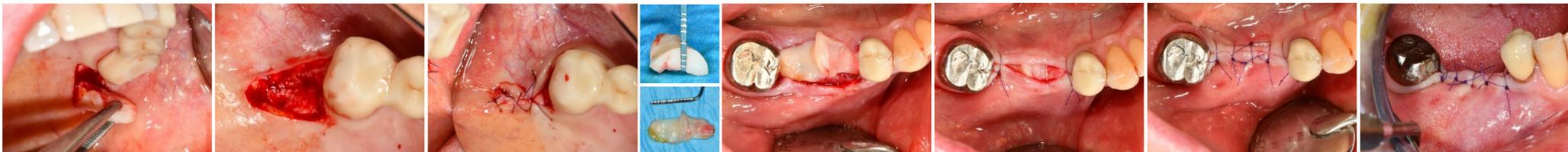
Primary closure of surgical flaps



Reopening surgery and implant placement



Connective tissue graft and primary closure of surgical flaps



Pre-operative Cone-Beam-Computed-Tomography (CBCT)



Post-operative Cone-Beam-Computed-Tomography (CBCT)

