

SCIENTIFIC ABSTRACTS

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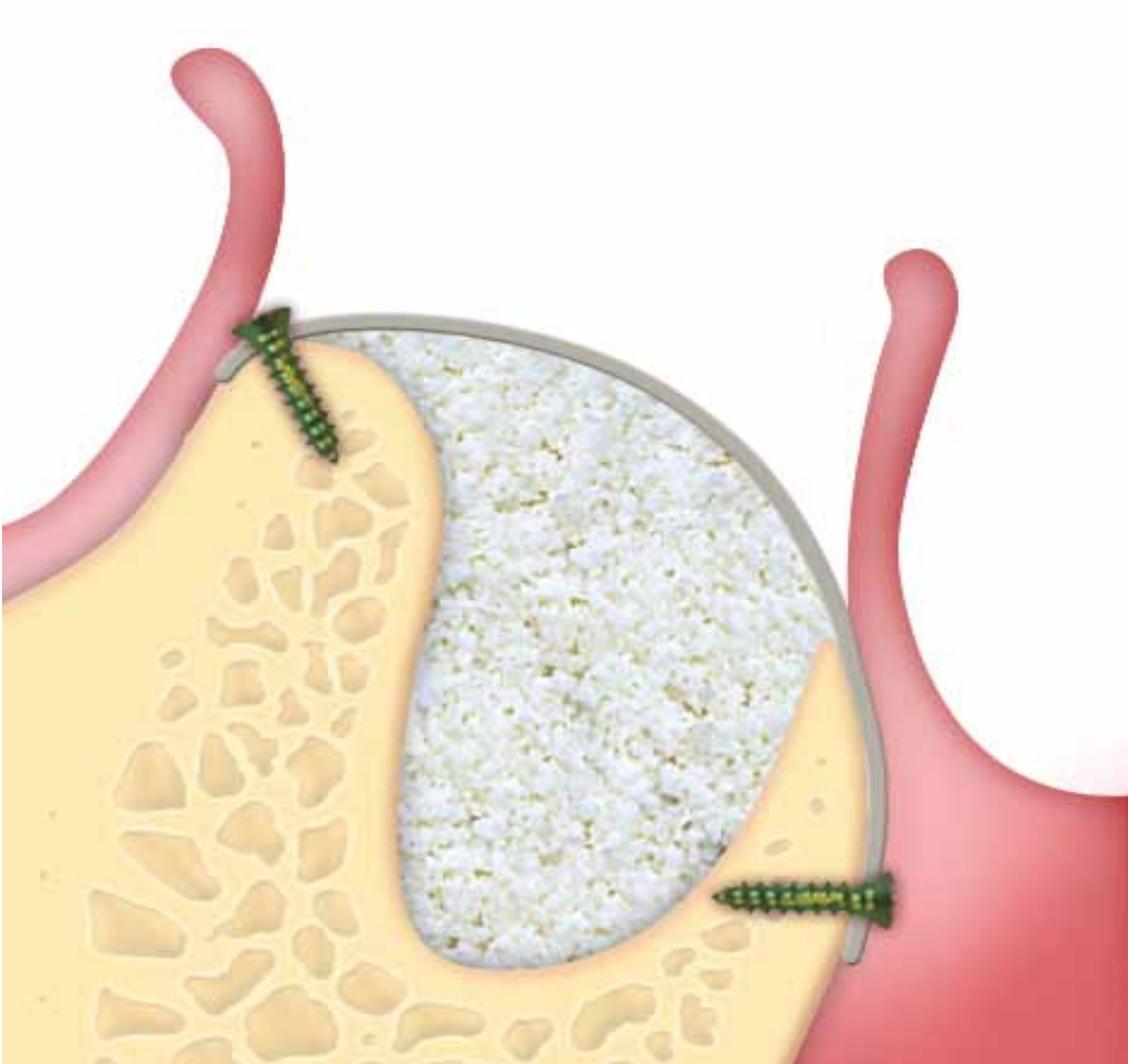
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HORIZONTAL AUGMENTATION

064

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The Bone Lamina Technique: a novel approach for lateral ridge augmentation - a case series

ABSTRACT

Even if nowadays dental implants are considered a successful option for the treatment of edentulousness, resorption of the alveolar ridge is still a concern as it may interfere with optimal three dimensional implant placement. In order to overcome this problem, different guided bone regeneration (GBR) technique have been suggested. As collagen membranes and nonresorbable membranes reinforced with titanium both present some drawbacks, in this case series the Authors present a different treatment approach for lateral ridge augmentation, called "Bone Lamina Technique". This technique uses a xenogenic cortical bone shield in combination with particulated bone substitutes and a thin collagen barrier, resulting in a biocompatible and mechanically stable concept for space maintenance and blood clot protection.

Four systemically healthy patients (aged 48 to 59 years) with inadequate dental alveolar ridge widths were selected for inclusion. All ridge defects were augmented using a xenogenic cortical bone shield (OsteoBiol® Lamina, TecnoSS®, Giaveno, Italy) in combination with a particulated bone substitute (OsteoBiol® mp3®, TecnoSS®) and a thin collagen barrier (OsteoBiol® Evolution, TecnoSS®) positioned on top of the bone Lamina. At re-entry surgery, biopsy specimens were harvested for histologic analysis and the results revealed a sufficient amount of bone structure for implant placement without additional augmentation procedures.

CONCLUSIONS

After the GBR, in all cases it was possible to place one or two implants without the need for additional augmentation procedures. Postoperative healing was uneventful, and clinically healthy mucosa without signs of infection covered the defect after 5 to 6 days.

The Authors affirmed in their conclusions "this case series inaugurated a novel clinical approach for lateral ridge augmentation, the Bone Lamina Technique. Re-entry surgery revealed that sufficient amount of bone was achieved in all treated cases and implants could be placed without an additional augmentation procedure. Histology revealed osteoconductive properties of the material and also indicated that resorption of the cortical Lamina had taken place. Therefore, this approach may have the potential to act as a biologic and stable barrier technique for augmentation procedures".

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ORIGINAL ARTICLE

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HORIZONTAL AUGMENTATION

095

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Regeneration of atrophic crestal ridges with resorbable lamina: technical note

ABSTRACT

Block grafts, both autologous and heterologous, and titanium grids are frequently used in surgical procedure aiming to increase the mandibular bone base, both horizontally and vertically, for implant purposes in atrophic distal ridges. In case of autologous block grafts, it is necessary to perform one operation in a donor site and a second one in the recipient site, with a considerable discomfort for the patient. Heterologous block grafts do not need two operations, but they do need the use of synthetic screws and pins for their fixation. Titanium grids are manageable with difficulties in the event of exposure and are removed with difficulty. In this work, a technique is proposed for the reconstruction of vertical and horizontal atrophic ridges with the use of a resorbable biomaterial of porcine origin, the cortical lamina, together with the collagenated and pre-hydrated granules and resorbable membranes of mesenchymal tissue (OsteoBiol® Lamina, OsteoBiol® mp3®, OsteoBiol® Evolution, Tecnos®, Giaveno, Italy). Ten patients, 3 males and 7 females, aged between 30 and 58 years, received a procedure of mandibular bone regeneration of atrophic ridges, with the insertion of a total of 16 implants. The implants were stabilized on the basal bone, leaving a gap between the lamina and the surface of the implant itself so that it could be filled with osteoconductive biomaterial. A collagen membrane was used to slow resorption (OsteoBiol® Evolution, Tecnos®) and to occlusally cover the defect. After 6 months, it was possible to see newly formed bone around the implants, and the complete integration of the previously inserted lamina.

CONCLUSIONS

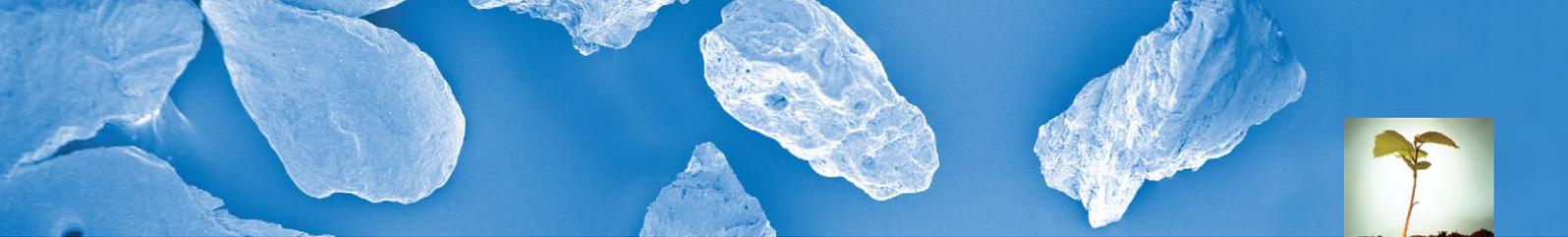
The results demonstrated that the use of porcine cortical laminae with a thickness of 0.9 mm allows for the creation of a rigid moldable box, in which it is possible to use collagenated and granulated fillers that can be easily reached by blood vessels and transformed into bone in order to act as a support for the implant load. It has been demonstrated the good vascularization of the graft combined with the integration of the lamina, which does not need to be removed. Consequently, the Authors concluded *"our results allow us to propose this technique as a potential alternative to those used to date"*.

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The use of a collagenated porcine cortical lamina in the reconstruction of alveolar ridge defects. A clinical and histological study

ABSTRACT

In case of hard tissue volume lack, the use of resorbable and non-resorbable membranes has been proposed in order to allow a proper alveolar ridge reconstruction. After the evaluation of the clinical advantages and disadvantages of different biomaterials normally used for this purpose, the Authors suggest that the use of a collagenated porcine cortical barrier seems to have relevant clinical advantages, including: the long-term stability of the membrane; its plastic consistency, well suited for the vertical reconstruction; the absence of a second re-entry surgery for its removal; the quality of integration with the native bone and the appositional graft; the second intention healing with keratinized mucosa in case of exposure and the poor presence of connective tissue over the regenerated bone.

The present pilot study included 8 partially edentulous patients (6 females and 2 males, mean age: 45 years) requiring bone regeneration procedures to achieve a prosthetically driven implant placement, with the aim to clinically and histologically evaluate the use of a collagenated porcine bone lamina in case of lateral and vertical bone augmentation procedures, in conjunction with porcine-derived bone particles. The bone graft consisted of a porcine-derived collagenated bone (OsteoBiol® mp3®, Tecnos®, Giaveno, Italy) whereas the membrane consisted of a porcine-derived collagenated cortico-cancellous shield (OsteoBiol® Curved Lamina, Tecnos®). The membrane is a soft cortical lamina derived from cortical porcine bone, with a plastic consistency, and can be shaped with sterile scissors to reach the desired size, and adapted to completely cover the grafting site.

The histological examination showed porcine bone to have osteoconductive properties, with the presence of new bone on the surface of the porcine bone particles. The Authors also found evidences of osteoclastic resorption, with no signs of foreign body reaction. Further, at the coronal part of the defect, a well vascularized connective tissue was found and this might suggest a certain porosity of the membrane, which allows vascular cells ingrowth and new vessels formation, attesting the biocompatibility of the shield.

CONCLUSIONS

The present study showed good clinical results when using a porcine bone substitute and a collagenated cortical lamina for the augmentation of the alveolar crest. A curved bone lamina was employed, with the clinical advantage of its adaptation to the alveolar crest, guaranteeing an optimal contour of the regenerated bone.

As the Authors stated in their conclusion: *"It may be assumed that the combination of a slowly resorbing cortical bone shield facing the inside of the defect and a biocompatible and tissue friendly collagenated membrane facing the outside could have the potential to simplify the achievement of the desired results without depending from operator skills"*.

HORIZONTAL AUGMENTATION

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HORIZONTAL AUGMENTATION

104

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The use of resorbable heterologous Cortical Lamina and micronized collagenated bone in the regeneration of atrophic crestal ridges: a surgical technique. Case series

ABSTRACT

In case of dental implants placement for prosthetic purposes in areas with severe atrophy, it is necessary to regenerate the ridges in order to have a good-quality bone to support the implants. To obtain the necessary pre-implant bone regeneration, several grafting techniques are available. An indispensable prerequisite is the stability of the biomaterial *in situ*, to be reabsorbed and substituted by new bone. Some graft materials, such as micronized and collagenated porcine bone, have an excellent capacity to be reabsorbed, but do not have the mechanical characteristics that would allow for stability in terms of shape and size. Consequently, it is necessary to adopt a proper technique, able to maintain such biomaterial stable *in situ*, without micromovements, for about six months. In this article, the Authors propose a technique for the reconstruction of vertical and horizontal atrophic ridges with the use of resorbable biomaterials of porcine origin: cortical lamina in connection with micronized collagenated bone paste and a resorbable membrane of mesenchymal tissue (OsteoBiol® *Lamina* and OsteoBiol® *Putty*, Tecnos®, Giaveno, Italy). In this technique, the use of porcine cortical *Lamina* with a thickness of 1 mm allows the creation of a semi-rigid moldable "container" in which a collagenated micronized heterologous bone paste can be put as a filler. This kind of biomaterial is easily accessible by blood vessels and is transformed into bone, to provide a stable support for the implant placement.

CONCLUSIONS

As during the post-operative check-up newly formed bone around the implants was observed, as well as the complete integration of the inserted *Lamina*, in their conclusions the Authors affirm: "In our experience, it is possible to propose this technique as an alternative to those previously and currently in use. Additional clinical and histological scientific studies are needed to evaluate the effectiveness of the technique and further develop its potential".

ORIGINAL ARTICLE

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