

Clinical Sheet

CORRECTION OF THE RIDGE PROFILE IN ESTHETIC MEDICINE

Use of a long-lasting bone substitute and of a cortical membrane.



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Implant-prosthetic rehabilitations in esthetic medicine require particular attention and skill on the part of the oral surgeon, who must carefully assess and eventually manage the bone volumes available. This sector, in fact, requires the presence of sufficient bone volume, which not only allows the positioning of the implants, but also must lead to an excellent esthetic result, providing suitable three-dimensional scaffold to the soft tissues.

In the absence of these conditions, the surgeon must intervene to correct the ridge profile, even in the presence of volumes sufficient for implant positioning. The function of the regenerated volume, therefore, will not be to allow the osteointegration of the implant, but to support the overlying tissues. The clinical objective is to maintain this volume stable in the long term. For this type of procedure, therefore, we may opt for bone substitutes characterized by long permanence at the site.

The same principle guides the choice of membranes that promote the maintenance of volume. In this sense, the possibility to use membranes from cortical bone, whose barrier function foresees their integration in the receiving bone tissue, and their remodeling in the same way as a bone substitute, may provide further guarantee of success.

Materials

The procedure entails using a bone substitute, Calcitos (OMC-30, Bioteck), and a cortical bone membrane (Bioteck). Calcitos is a biomaterial of equine origin obtained by a high-temperature treatment that endows it with long resorption times and long-lasting permanence at the graft site. The membrane, on the other hand, is obtained by eliminating equine antigens via the Zymo-Teck process, which, by using hydrolytic enzyme mixtures at controlled temperatures, preserves the collagen components of the bone, thus promoting the bone

regeneration process. The presence of collagen offers the possibility of obtaining a cortical bone membrane: it, in fact, consists of a thin layer of bone tissue which, by preserving collagen intact, can be rendered flexible via a controlled demineralization process. Although it acts like a membrane, it is, for all intents and purposes, a bone graft which is physiologically remodeled by bone tissue cells. Histological studies have shown that the cortical membrane protects the graft site for more than 6 months.



Fig. 1 – Clinical appearance prior to the procedure. Agenesis of tooth 1.2.

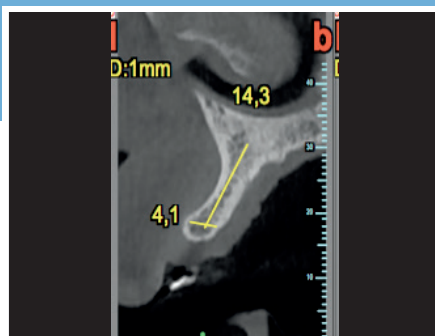


Fig. 2 – The CBCT exam showed the presence of significant reduction of the ridge thickness.

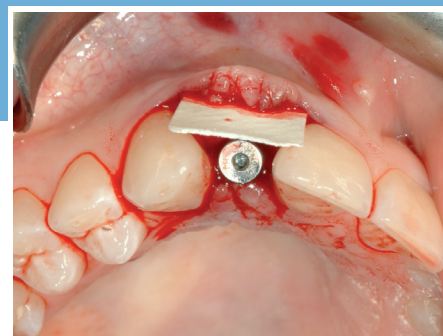


Fig. 3 – Following the implant insertion, the dry membrane is inserted under the vestibular flap to be shaped.

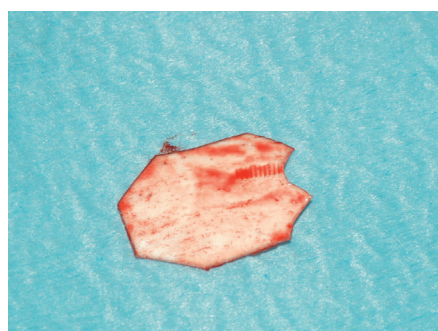


Fig. 4 – The shaped membrane.

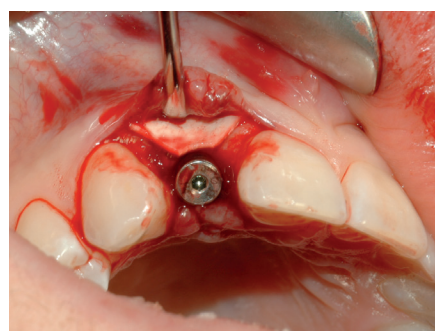


Fig. 5 – The shaped cortical membrane is placed underneath the vestibular flap.



Fig. 6 – The space between the cortical membrane and the vestibular slope is filled with equine origin bone granules.

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Results

The sheet summarizes the case of a 20-year-old patient suffering from agenesis of tooth 1.2 who sought the correction of the resultant esthetic defect.

CBCT examination showed bone volume sufficient for the stable insertion of an osteointegrated implant; the same examination, however, confirmed the observation made during the objective clinical examination, i.e. that the ridge thickness was significantly reduced at the site of the missing tooth.

It was, therefore, suggested that the patient followed a treatment plan that consisted of receiving a single crown prosthesis, following the insertion of an osteointegrated implant at the site of the missing tooth and a concomitant bone regeneration procedure aiming at the correction and long-term preservation of the thickness of the ridge profile.

Having detached a trapezoidal flap on the vestibular

side of the ridge, the surgeon proceeded with the insertion of the implant. The receiving bone site was prepared; a cortical membrane was shaped while dry and was inserted under the vestibular gingival margin.

This maneuver makes for the easier placement of bone granules in the space between the membrane and the vestibular slope of the ridge, avoiding dispersal.

Once the space had been filled, the membrane was flexed to protect the entire graft. As the membrane was deemed to be mechanically stable, it was not fixed with osteosynthesis means. Sutures followed.

Four months later, a healing screw was placed. Another four months later, the soft tissues appeared to have healed completely and the final prosthesis was delivered. Two years later, the appearance of the prosthetic rehabilitation was satisfactory and X-ray imaging showed that peri-implant levels had been preserved and there was no sign of bone resorption.

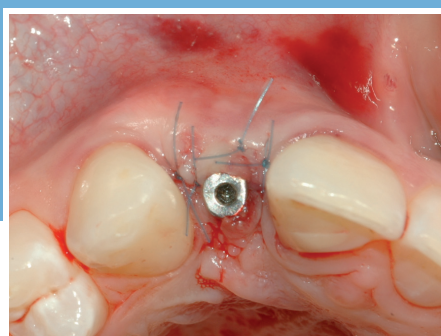


Fig. 7 – The membrane is placed in such a way as to protect the entire graft and is sutured.

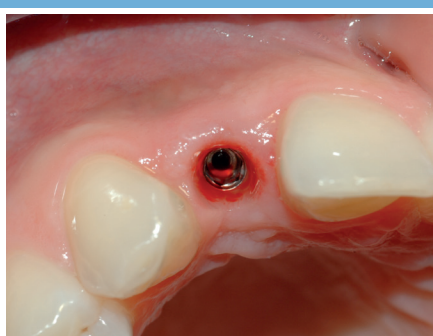


Fig. 8 – Four months after the procedure, a healing screw is placed.



Fig. 9 – After a further four months, the definitive prosthesis is delivered.



Fig. 10 – Endoral X-ray 2 years after the operation. Peri-implant bone levels are retained.



Fig. 11 – X-ray 2 years after the procedure. Peri-implant bone levels are retained and there is no sign of bone resorption.



Fig. 12 – The aesthetic appearance of the prosthetic rehabilitation 2 years later is still excellent.



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