Clinical Sheet REGENERATIVE SURGERY OF AN ENDO PERIODONTAL DEFECT WITH AN EQUINE ORIGIN BONE SUBSTITUTE





Dr. Francesco Bellucci Private practitioner Avellino, Italy infostudiobellucci@gmail.com



In subjects most at risk, the inflammatory response to bacterial colonization may significantly alter this balance and give rise to periodontitis, a destructive process that leads to the loss of some of the bone and connective tissue, as well as to apical migration of junctional epithelium. The subgingival microbial biofilm and the inflammatory condition it causes may be eliminated through non surgical approaches, but this normally does not grant restoration to the original condition of impaired tissues. Partial periodontal impairment as well as the presence of residual bone defects in the alveolar process are often observed.

Hence the clinical need to have recourse to bone regeneration procedures, with the aim of improving long-term prognosis, that is, preservation of the members originally affected by periodontitis for the longest time possible. Within this framework, using a bone substitute that features osteoconductivity, osteoclastic remodeling and is easily handled may be a significant aid in achieving long-term clinical success. Just as essential is the use of appropriate membranes for guided tissue regeneration.

Materials

The procedure entails using a Bioteck equine bone substitute consisting of a 1:1 mixture of cancellous and cortical granules sized 0.5-1 mm and an equine pericardium membrane (Heart, Bioteck). Both grafts are obtained by removing the antigens from the equine tissue of origin through the exclusive enzymatic process Zymo-Teck. Thanks to Zymo-Teck the bone collagen is retained within the granules and the intermolecular bonds of the pericardium collagen chains are preserved. The bone graft contains native collagen, and is therefore a scaffold that, being subject to osteoclastic remodeling allows a significant amount of new bone tissue to be formed.

Thanks to its specific three-dimensional molecular shape, the membrane is resistant, easily handled, and its protection time – unlike those in denatured and non cross-linked collagen, may reach three-four months.



Fig. 1 – CBCT sagittal section: vestibular shift of the canal is observed with no impairment.



Fig. 2 – Initial probing on the palate side is about 10 mm.



Fig. 3 – The pericardium membrane is appropriately shaped before performing the bone graft.



Fig. 4 – After placing the membrane, which acts as an aid to contain the granules, the bone graft is performed.



Fig. 5 – The graft is protected with the membrane, folded so as to partially overlap its two ends.



Fig. 6 – Suture to the neck is performed and two single stitches are placed for the flaps.



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Bioteck granular grafts make it possible to successfully treat periodontal origin bone defects.

Results

The sheet summarizes the case of a patient who presented to the surgeon with periodontal issues.

The periodontal probing found a 10 mm pocket on the palate side for tooth 2.1. Endoral X-rays showed an endo-periodontal lesion of endodontic origin in the root, compatible with external resorption. The tooth was positive at vitality tests, and the patient did not report any pain. It was therefore decided to perform CBCT to better define the limits of the lesion and appropriately plan treatment. The examination showed how the endodontic canal had moved in the vestibular direction with the progress of the lesion although without being directly involved.

On the basis of the risk profile assessment (periodontal patient, deep bite with asymmetry of the two central incisors, young age) it was decided to save the tooth through a combined endodontic and surgical approach. After incising and detaching a full thickness flap with preservation of palate papillae, surgical cleaning was performed on the granulation tissue around the defect, using manual and ultrasound instruments. The resorption was then sealed with Super Eba cement, preferred over the more common MTA, to immediately achieve a stable support for subsequent regeneration. After finishing and polishing the cement, the granular biomaterial was grafted and the pericardium membrane was placed in order to promote optimal clotting stabilization and reduce the risk of dehiscence. The membrane was sutured to the neck of the tooth with a sling suture and the flap was closed again with interrupted stitches. Root canal treatment was performed on the member at the same time. One year after treatment, the follow-up CBCT shows the lesion has filled and the bone ridge is stable. The 3-year follow-up shows good integrity and tone of the margin tissues upon periodontal probing and the X-ray examination highlights maturity of the marginal bone.



Fig. 7 – One year follow-up CBCT, sagittal section. Excellent maintenance of periodontal bone levels is observed.



Fig. 8 – Periodontal probing after 2 years is about 4 mm.



Fig. 9 – Follow-up X-ray after two years; good maintenance of periodontal bone levels is observed.



Fig. 10 – Periodontal probing after 3 years is down to about 2 mm.



Fig. 11 – Vestibular appearance of tooth 2.1 after 3 years; tissues appear to be intact and with good tone.



Fig. 12 – Follow-up X-ray after 3 years; maturity of the marginal bone tissue is observed.



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