Dental Surgery

Clinical Sheet

TREATMENT OF INTRABONY DEFECTS CAUSED BY PERIODONTITIS

Use of collagen preserved bone substitutes and pericardium membranes of equine origin for the treatment of periodontal defects.

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Periodontitis is a common condition that affects over 10% of the world's population. It is caused by the formation of a bacterial film that builds up in the space between the teeth and the soft tissues.

In its more advanced stages, the condition causes the formation of multiple or isolated intrabony defects, that are irreversible. Their treatment requires periodontal regeneration techniques. Regeneration procedures include the use of membranes and bone grafts, possibly in combination with other biologically active materials.

The success of the regeneration procedure depends on a series of different factors. The characteristics of the bone defect that may affect the success of the regeneration procedure are the angle of the defect, its depth, the number of residual bone walls, and the mobility of the adjacent teeth. In addition, the patient's compliance with correct oral hygiene and whether the patient is a smoker or not also play an important role. The surgeon's experience and clinical ability play an equally important role, as does their ability to make optimal use of the materials at their disposal.

Materials

The periodontal regeneration procedures have entailed using the OsteOXenon bone graft in granules (OX, Bioteck) and the Heart pericardium membrane (Bioteck), both of equine origin.

The OX bone graft consists of cortical and cancellous granules (1:1) sized 0.5 – 1 mm. OX is obtained through the Zymo-Teck enzymatic process at controlled temperatures, which selectively removes equine antigens while preserving the bone structure without modifying its mineral and collagen components. Thanks to these special features, the OX bone substitute is remodeled by newly-formed bone tissue in physiological time frames.

Zymo-Teck is also applied to obtain the Heart pericardium membranes: the selectivity of the process is used to leave unaffected the inter-molecular bonds that provide excellent mechanical resistance to the membrane, as well as ensuring a significantly longer protection time than conventional collagen membranes. These features render this membrane ideal for a wide range of applications.

Fig. 1 – *Clinical analysis: assessment of the mesial probing depth at the site of tooth 1.3.*

Fig. 2 – *X-ray before the procedure.*

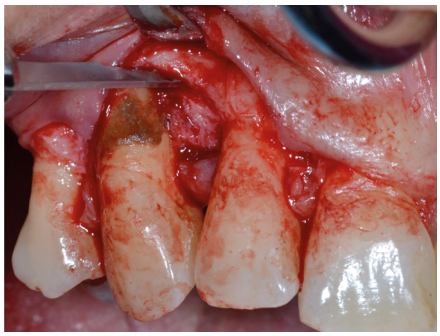

Fig. 3 – *Lifting the flap and cleaning the defect by removing the fibrous tissue.*

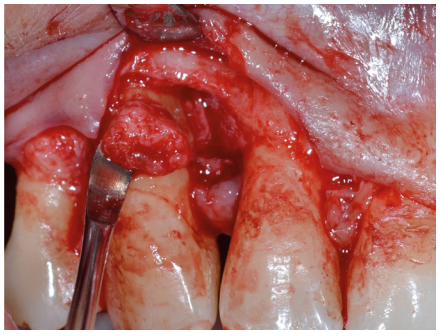

Fig. 4 – *Fibrous tissue removed from the defect.*

Fig. 5 – *Debridement of the defect with ultrasound tools.*

Fig. 6 – *Placement of the Heart pericardium membrane.*

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Results

The sheet shows the results of a retrospective study on 27 patients (14 women and 13 men, whose age ranged from 47 to 77 years) suffering from periodontitis, who were treated with regenerative procedures.

Before the procedure, all patients presented with a probing depth (PPD) of more than 5 mm and an average plaque index (PI) of less than 1. The bone defect had one, two or three walls.

The patients underwent the regenerative procedure following thorough clinical and X-ray diagnosis. Having exposed the defect, the clinician performed a debridement treatment, removing the fibrous granulation tissue with manual tools and piezoelectric inserts.

They then performed the scaling and root planing procedures. The defects were grafted with OX bone granules, previously hydrated with sterile saline solution. The Heart membrane was shaped, hydrated, placed to protect the graft sites and fixed with a titanium pin. The flaps were then closed and sutured.

The patients were regularly invited for observation in follow-up visits for up to 3 years after the procedure. The following clinical parameters were measured during the visits: Pocket Probing Depth (PPD), Clinical Attachment Level (CAL), Plaque Index (PI), Sulcular Bleeding Index (SBI).

No adverse events or complications occurred in any of the patients throughout the entire healing period. The values measured for all four parameters at each visit during the follow-up period were significantly lower than the initial ones, regardless of the number of walls of the periodontal defect.

The combined use of the bone graft and the pericardium membrane, therefore, allowed a safe and effective regeneration treatment to be performed on a significant number of patients in the medium term.

Fig. 7 *– OsteOXenon granules hydrated with sterile saline solution.*

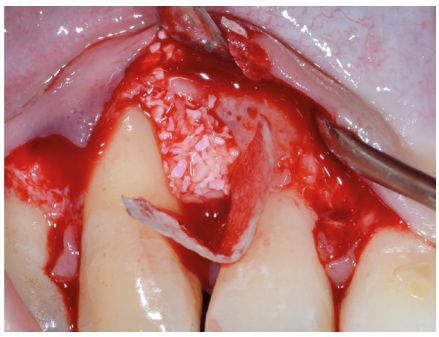

Fig. 8 *– Insertion of the biomaterial in the intrabony defect.*

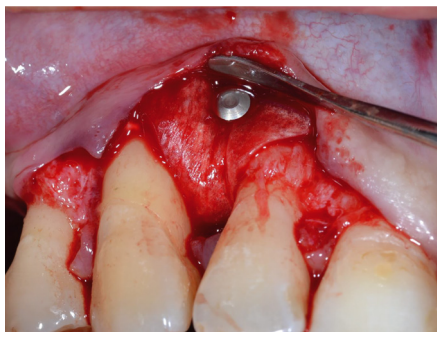

Fig. 9 *– Deflection of the membrane covering the internal graft and fixation with a pin.*

Fig. 10 *– Suturing the flap with a vertical mattress stitch.*

Fig. 11 *– Clinical appearance at the twelve-month follow-up.*

Fig. 12 *– X-ray at the 12-month follow-up.*

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