BioXclude Allograft Placental Tissue Membrane in Combined Regenerative Therapy in the Treatment of a Periodontal Intrabony Defect: A Case Report

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Background: Combined regenerative approaches for teeth with intrabony or furcation lesions have included membranes to prevent apical migration of both the epithelial cells and connective tissue into the space, to facilitate containment of the bone replacement graft along with stabilizing the newly formed clot. This case report documents the use of amnion chorion membrane (BioXclude) as a part of combination regenerative therapy for the treatment of a challenging periodontal intrabony defect.

Case Summary: An otherwise healthy 63 year old female was referred for evaluation and treatment on the maxillary left second premolar (tooth #13) (Figure 1). There was both clinical attachment loss and a pocket depth of 8 mm. Radiographs suggested that the lesion was a combination defect that approached the apex of this tooth, yet remained as a separate clinical entity to the pulp (Figure 2). The patient was scheduled for surgery to treat this tooth which had a questionable prognosis.

Prior to surgery, the patient was rinsed with chlorhexidine 0.12%. Sulcular full thickness flaps were elevated with papilla preservation being performed between the premolar and first molar. Upon reflection, the defect was debrided of all soft tissue, followed by scaling and root planning using ultrasonic and hand instrumentation (Figure 3). The tooth was detoxified using 250 mg of tetracycline and 5 milliliters of sterile water applied for 2 minutes followed by a thorough rinsing with sterile water. The root surface then had recombinant platelet-derived growth factor (rhPDGF BB) applied to it. Freeze-dried allograft bone (FDBA) that was rehydrated with rhPDGF-BB for several minutes was gently packed into and slightly overfilled the defect (Figure 4). BioXclude which had been trimmed to size was carefully placed dry over the graft material with embossed side facing outward (Figure 5). The membrane was left undistributed to hydrate for two minutes and then carefully moved into final position using a wetted microsurgical elevator. Taking special care not to alter the membrane, the flaps were coapted over the defect using 6-0 ePTFE sutures with an interrupted technique (Figure 6).

The patient was administered 1 gram of amoxicillin at the end of the surgery along with 800 milligrams of ibuprofen. The amoxicillin was continued for 7 days at a dose of 875 mg twice daily. Patient discomfort was managed with ibuprofen 600 mg, which could be taken every 4-6 hours up to five times daily if needed. The patient was instructed to cease all brushing and flossing at the treatment site for one month to allow for wound quiescence and prescribed Chlorhexidine twice daily to manage postoperative plaque. At 2 weeks the sutures were removed. For the following 2 months, the patient was seen every 2 weeks to maintain thorough plaque debridement and then every other month for up to six months post surgery. Thereafter, the patient has been seen on 3 month intervals for her maintenance care. In addition to this, endodontics was completed due to a periapical lesion that developed post surgery.

Results: At two and four weeks, the treated site exhibited uneventful early healing with soft tissue response being quite good as minimal inflammation was demonstrated (Figure 7 and Figure 8). At six months there was a 5 mm gain in clinical attachment and probing depth was reduced to 3 mm (Figure 9). A radiograph of the area at six months suggested very good bone fill (Figure 10) and the area has remained stable at the one year post-surgical visit.
**Case Study**

**Discussion:** This case report provides evidence that the use of BioXclude, in a combined regenerative approach for the treatment of a challenging periodontal intrabony defect, provides for a successful result. Furthermore, this tooth was critical to retain. If it were lost, an implant might well require a sinus associated procedure for its successful placement. Adding this tooth into a fixed prosthesis would have required remaking the already existing bridge into one that had 8 units. Both of these options would have incurred considerable time and cost for the patient. The alternative choice of wearing a removable prosthesis was totally unacceptable to this patient.

BioXclude is a processed, dehydrated and sterilized graft of human amnion and chorion tissue. These two layers of tissue represent the innermost lining of the placenta, the part which encloses and protects the developing fetus through term. The tissue is obtained from donating mothers undergoing elective caesarian section deliveries. Procurement and processing of the tissue was performed in accordance with stringent regulations set forth by the Food and Drug Administration and the guidelines of the American Association of Tissue Banking.

Placental tissue is inherently immunoprivileged and as such, does not elicit a foreign body inflammatory response. Its use has shown to have a local anti-inflammatory and anti-bacterial effect during tissue healing. Amnion tissue, which sits on top of chorion tissue, possesses a protein-enriched basement membrane which includes the presence of laminin-5, a protein with a high affinity for cellular adhesion of gingival epithelia cells. This provides a bioactive matrix for cellular migration.

The physical nature of BioXclude, when it becomes hydrated, allows for less precise trimming of the membrane. Once hydrated, the membrane tightly adapts to the underlying bone graft and naturally self-adheres to the proximal bony walls. However, this same characteristic does not allow BioXclude to provide any space maintenance capabilities and requires it to be placed directly over a bone replacement graft. BioXclude’s relative thinness (300 µm) and adaptability are two of its advantages when there is limited gingival tissue available to advance over the adapted membrane.

Placental allografts are new to the field of periodontology and BioXclude possess several key features that make it an attractive option for combined regenerative approaches for osseous lesions. This case report demonstrates the positive benefits for using BioXclude to achieve a successful clinical regenerative outcome for managing a challenging periodontal intrabony defect.

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**References:**