

### Severe Bone Loss in Pulpal Vitality Upper Incisor: Case Report

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#### Abstract

The objective of this report was to present the diagnosis and treatment of a periodontal lesion, with a deep pocket (> 10mm), forming a dehiscence bone defect that affected the patient's central incisor, promoting chronic inflammation. Despite the poor prognosis, the defect was treated with regenerative periodontal procedures, and at five months post-operative, the clinical examination showed no periodontal pocket (<3mm) or bleeding. We conclude that even in deep pockets and extensive bony defects, without bone walls, guided tissue regeneration is the primary treatment choice.

**Keywords:** Periodontal Disease, Guided Tissue Regeneration, Heterografts, Amelogenin.

#### Introduction

The concept of guided tissue regeneration technique (GTR) involves excluding the epithelium and the gingival connective tissue through the use of a barrier or resorbable membrane, in order to allow repopulation of the root surface previously exposed to periodontal disease by cells from the periodontal bone, cementum and periodontal ligament (1).Associated with the concept of GTR, the biomodification of the root surface can be applied to

improve the result. One of the products used, the 24% EDTA gel (Prefgel® ), serves to remove the smear layer (2).Another biomodifier is the protein derived from the enamel matrix or amelogenin - Emdogain®1 (EMD). Studies indicate that EMD can mimic the process of odontogenesis, with the proliferation and differentiation of various types of cells which promote regeneration of periodontal ligament's cemento and fibers (3, 4).In periodontal defects with great bone loss, the use of a bone substitute as an heterograft (Geistlich Bio-Oss® ) is indicated, aiming to provide a scaffold where the bone tissue of the host can be deposited, associated with a reabsorbable membrane (5).

#### Case report

The patient was female, 46 years old, diagnosed with stage III periodontitis, Grade B (6), presented in clinic with a complaint of localized pain and swelling over the vestibular region of 11 (Figure 1).After patient's anamnesis and clinical and periodontal examination, we found a 15mm probing depth (PD) in the mesiovestibular, vestibular and distovestibular sites of element 11 (Figure 2), with profuse bleeding. Tooth preserved pulpal vitality. For a better understanding about this disorder, a cone

beam tomography was asked for visualization of the bone walls, and then total absence of the vestibular bone plate was found (Figure 3). Based on clinical and radiographic evidence as well as the patient already having Phase I Therapy proceeded, including scaling and root planning plus occlusal adjustment, we opted for periodontal surgery with guided tissue regeneration.

Under local anesthesia, we performed a total thickness flap. With the exposure of the root surface, additional scaling and root planning were promoted with caution, avoiding breaking of the nerve and vascular bundle of the tooth. Next, a 24% EDTA gel (Prefgel<sup>®2</sup>) was applied for two minutes, preventing its contamination by blood, for the removal of the smear layer without cauterizing the neighboring tissues. We washed abundantly using saline clearing it from all of the EDTA (Figure 4).

Removed the smear layer, the root was treated with application of EMD (emdogain<sup>®2</sup>) (Figure 5), avoiding its contamination by blood for a period of two minutes, aiming the incorporation of the material on the root surface. During this, we prepared a bovine bone heterograft (Geistlich Bio-OssCollagen<sup>®2</sup>) by hydration with saline solution and by cutting it with the scalpel blade to fit the size (Figure 6).

The appropriate volume is then positioned over the emdogain<sup>®2</sup> gel (Figure 7) and we proceed the clipping of the Geistlich Bioguide Membrane-Perio<sup>®2</sup>, originally sized 16 by 22 mm. The trigged membrane was adapted over the Geistlich Bio-OssCollagen<sup>®2</sup>, taking care of its edges to fall towards the healthy bone tissue of neighboring teeth and positioning its coronal edge parallel to the gingival margin (Figure 8).

After suture (Figure 9), the patient was instructed about postoperative care. Seven days after, suture was removed, so a clinical control and maintenance was established

(Figure 10). PD examination was performed after four months (Figure 11).

The PD at 120 days was 2mm in the mesiovestibular and distovestibular sites, 3mm at the vestibular site, and a measurement of 2mm recession in the mesiovestibular, 3mm in the vestibular and 2mm in the distovestibular site. There was no bleeding after probing. Tooth maintained pulp vitality.

## Figures & Tables

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Figure 1: Initial aspect



Figure 2: Clinical probing depth



Figure 3: Tomographic section

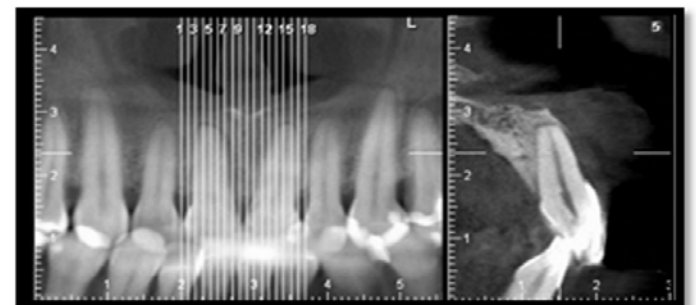


Figure 4: Conditioned root surface

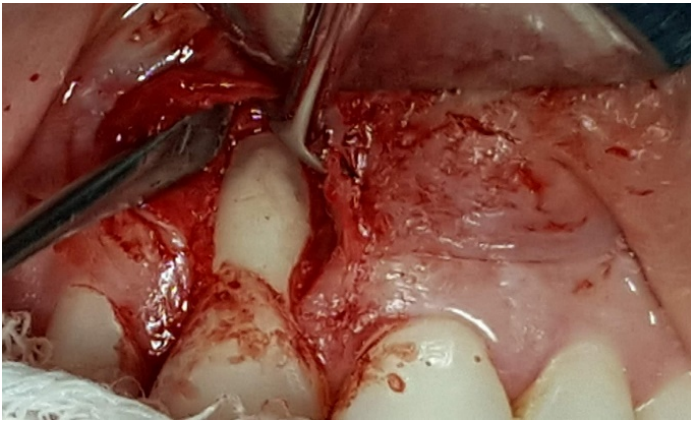


Figure 5: Application of emdogain

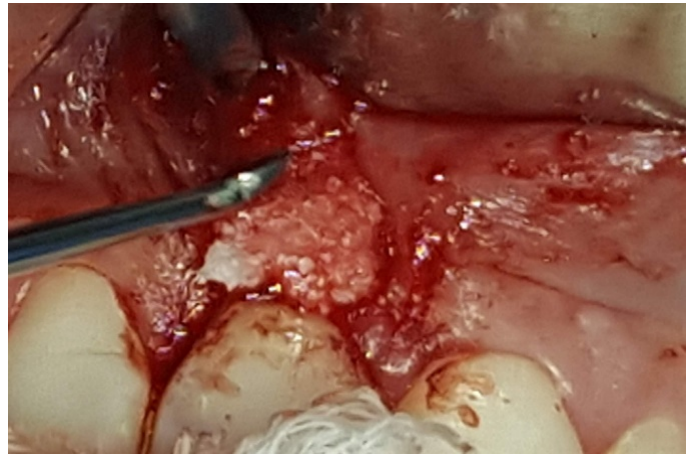


Figure 8: Membrane adaption

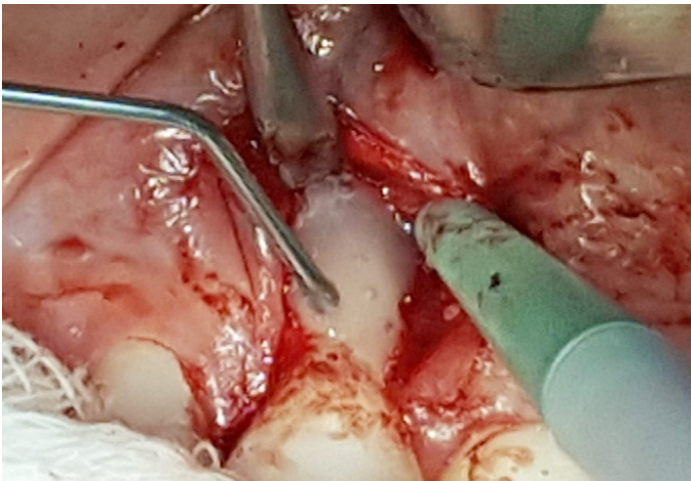


Figure 6: Block cutting

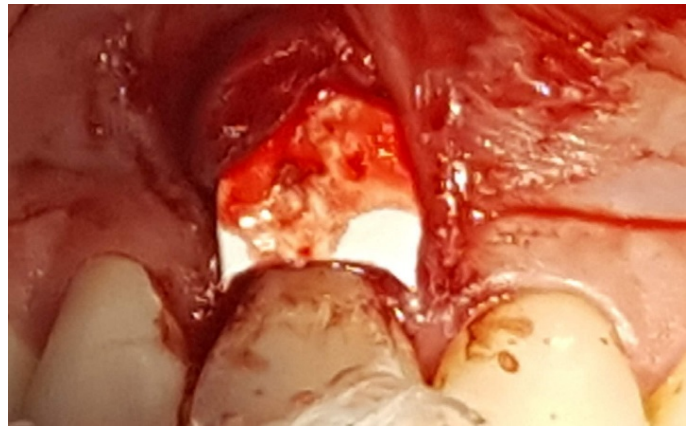


Figure 9: Suture

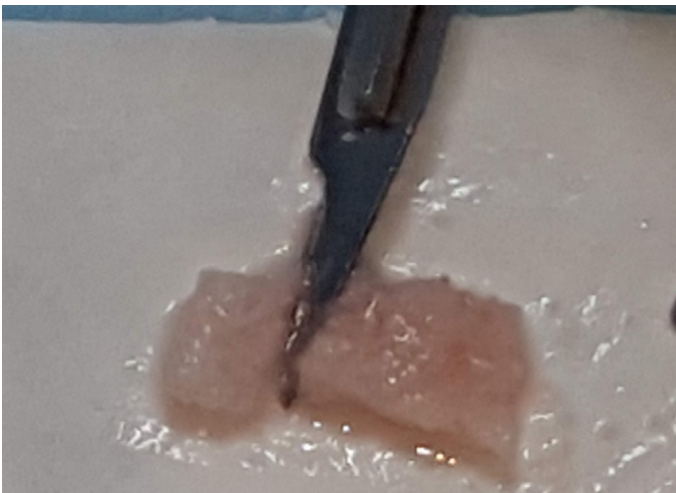


Figure 7: Block adaption



Figure 10: Postoperative after 12 days





Figure 11: Final PD of 3mm at 120 days



### Conclusion

The periodontal treatment with the use of guided tissue regeneration allowed periodontal disease control, being verified through clinical characteristics such as color, texture, bleeding absence and also periodontal pocket reduction with clinical gain of attachment, demonstrating this alternative treatment's viability.

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