

# SEQUENTIAL THERAPEUTIC APPROACH FOR ENDODONTIC-PERIODONTAL LESION IN PATIENT WITH CHRONIC PERIODONTAL DISEASE - CASE REPORT

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### ABSTRACT

Periodontal disease in its final phase results with loss of the supportive dental tissues. Because of the anatomic and vascular proximity dental pulp is compromised too. Sometimes, untreated primary endodontic lesion becomes secondarily involved with periodontal breakdown. In such case, endodontic treatment won't result in complete healing and additional periodontal treatment should be performed.

**Objective:** This case report shows sequential combined endodontic - periodontal surgical procedures with ultimate goal to save a tooth previously defined as hopeless and to improve therapy outcome for conducted periodontal treatment.

**Methods:** Modified Widman flap was raised on the upper left side, careful scaling and root planning over the anesthetized tooth were conducted and in all bone defects Bio-Oss® was implemented. Two weeks later the same procedure was conducted on the upper right side.

**Results:** At the control visit we have noticed improvement in all clinical parameters and patient doesn't complain to pain. For the tooth number 16, final endodontic treatment was referred. Three month's later we recorded reduction in pocket depth and gain in clinical attachment level.

**Conclusion:** Combining periodontal regenerative and endodontic microsurgery, we have achieved positive results in prolonged tooth sustain, and benefit to periodontal therapy. Therapy conducted to resolve the inflammation, to influence the microbes responsible for the infection, and the use of Bio-Oss® in order to stimulate bone regeneration, enables clinician to deal with complex problem such endo-periodontal lesion is, and to achieve better results.

**Key words:** Endodontic-periodontal lesions, diagnosis and treatment, periodontal surgery, Bio-Oss®

## Introduction

Pulpal problems and simultaneous inflammatory periodontal disease complicate diagnosis and treatment planning. This is the case report for the patient with pulpal disease, tooth loss and advanced periodontal disease.

The pulp has good capacity to defense itself as long as the blood supply trough apical foramina is not disturbed. Periodontitis is chronical inflammatory lesion which begins in the marginal gingiva and extends apically, causing attachment loss and periodontal pocket formation. Appropriate endodontic therapy is sufficient for healing of the primary endodontic lesion. In rare cases an abscess of pulpal origin through the apical or lateral canal may establish drainage through the periodontal ligament and erupt into the furcation or the gingival sulcus and in such situation fistula cannot be observed [1,2]. For that, it is necessary to differentiate the symptoms of the pulpal disease from those of the periodontal abscess.

Detailed history, careful clinical and radiographic examinations are needed to assess the contribution of each lesion and to bring a proper treatment sequence that will give optimal therapeutic result. While the endodontic treatment is predictable, the periodontal component of a combined lesion is more difficult to resolve. The prognosis for a tooth with combined lesion is related to the extent of the periodontal attachment loss. When a periodontal lesion is advanced and a bony defect comprises more than one

wall, the success of the therapy depends on the ability to regenerate the attachment levels [1-4]. Bone has good regenerating capacity but limiting factor is lack of appropriate space maintenance for the bone formation. Bone graft materials are used to enable a new bone formation. Osteoconductive materials play roll as a scaffold for the bone growth. They allow formation of a new bone along the graft material surface bridging the defect that wouldn't be able to be filled with bone [5,6].

Bio-Oss® has shown as effective bone graft material for a local augmentation. Because of its similarity to the human bone it is highly successful in helping new bone to form and it is very well accepted by the defense mechanisms as a friendly graft [7-9].

## Case description and clinical picture development

A 42- year- old male, was referred to the Clinic for Oral Pathology and Periodontology within the PHO University Dental Clinical Centre, with pain coming from a deep periodontal pocket in the upper right quadrant, around the tooth 16. The tooth was already under endodontic treatment (**Figure 1.**). Patient complained for bleeding when brushing, annoying pain around all teeth for about a month. Patient's medical history was not contributing and dental history gave information about previous periodontal treatments for more than ten years. Patient doesn't smoke and doesn't take any other therapy.



**Figure 1.** The tooth 16 with deep periodontal pocket and endodontic lesion under treatment



**Figure 2.** Radiograph image showing the greatest bone loss around the tooth 16



**Figure 3.**  
Panoramic radiograph image showing generalized horizontal bone destruction and vertical bone loss around teeth 16, 26 and 45



**Figure 4.**  
Flap adapted near the teeth and fixed with single sutures



**Figure 5.**  
Flap adapted near the teeth and fixed with single sutures

Periodontal examination showed generalized gingival inflammation - GI=3, sulcus bleeding index - SBI=4 (Muehleman and Son), probing depth - PD= 7 to 9 mm, clinical attachment loss - CAL= 9 to 11 mm and dental luxation - DL=2. Radiograph image showed the greatest destruction around tooth 16 (**Figure 2.**) where probing revealed grade II furcation defect according to Glickman's classification of furcation involvement [1]. Panoramic radiograph image (**Figure 3.**) showed generalized horizontal bone destruction in almost all quadrants i.e. 16, 26 and 45. Based on the clinical history and clinical and radiographic examination, diagnosis of a chronic generalized periodontitis with abscess in progress around the tooth 16, was determined [2].

## Treatment approach

At the first visit a whole mouth treatment with meticulous scaling and root planning were obtained, directions for good oral hygiene were given and antibiotic were prescribed [3]. Two weeks later, clinical parameters were improved and appointment for periodontal surgery to the upper left side from tooth 11 to 27, was scheduled. After standard disinfection, operative region was anesthetized by infiltration injection of 2% Lidocaine Adrenaline. Modified Widman's flap [4-6] was raised and careful scaling and root planning on teeth 11, 21 - 27. Surgical region was rinsed with 0, 9% saline, vertical bone defects were filled with Bio-Oss® [7-9]. Flap was adapted near the teeth and fixed with single sutures (**Figure 4 - 6.**). A day prior to the procedure,

patient was protected from infection spreading with amoxiclave (1000 mg. tablets, twice daily) [10] for five days. Ten days later, clinical findings were fair, patient had no pain (**Figure 7.**).

Two weeks after, the same procedure was implemented on the right upper side. After removal of the stitches the final endodontic treatment on the tooth 16 was recommended in accordance with the adopted doctrine. Detailed instructions for meticulous oral hygiene at home were directed and monthly control appointments were suggested [11-13].

Postoperative results were evaluated three months later and remarkable improvements were recognized in all clinical parameters. We recorded clinical reduction in pocket depth - PD=5 to 6 mm, - CAL=8 to 9 mm, - DL= 1. (**Figures 8-11.**).

Patient was referred for recall visit in sixth month for repeated notification of the clinical parameters (**Figure 12.**).

## Discussion

When there is a doubt whether it is periodontal or it is an endodontic origin of the lesion or both, we can follow the treatment strategy recommended for combined lesions [14-16].

According the vitality of the pulp, if the pulp is vital periodontal treatment should be conducted [14, 15], if the pulp has no vitality endodontic treatment has to be taken [16]. And if there is endodontic-periodontal origin of the lesion and the pulp is no vital, therapy starts with endodontic treatment and afterward periodontal treatment should be included. There are many case reports where using regenerative periodontal techniques showed positive outcome for endodontic-periodontal lesions [17].

In this case endodontic therapy was started previously, periodontal therapy and bone grafting were done to favor periodontal regeneration [18,19]. We used Bio-Oss® as bone graft material. It is biocompatible and osteoconductive material that enables surface conductive to new bone formation. Bio-Oss® particles are incorporated over time within living bone which provides long-term volume preservation [20-22].



**Figure 6.**  
Flap adapted near the teeth and fixed with single sutures



**Figure 7.**  
Ten days later: Fair post-treatment clinical findings and patient had no pain.



**Figure 8.**  
Three months later – Remarkable improvements in all clinical parameters: PD = 5 to 6 mm, CAL =8 to 9 mm, DL= 1



**Figure 9.**

Three months later – Remarkable improvements in all clinical parameters: PD = 5 to 6 mm, CAL =8 to 9 mm, DL= 1



**Figure 12.**

Follow-up radiograph at 4 months reveals bone fill around tooth- 16



**Figure 10.**

Three months later – Remarkable improvements in all clinical parameters: PD = 5 to 6 mm, CAL =8 to 9 mm, DL= 1



**Figure 13.**

One year after the operation



**Figure 11.**

Three months later – Remarkable improvements in all clinical parameters: PD = 5 to 6 mm, CAL =8 to 9 mm, DL= 1

Two weeks later epithelial attachment was established but complete bone formation is expected 6 months after periodontal surgery. Very important phase is maintenance and it starts before the surgery. Patient was advised for further meticulous oral hygiene. Instructions were given on what means he should choose and how to use them in order to achieve best results in the phase of the maintenance. Patient was advised for monthly checkups for permanent control over the surgery results [23, 24] One year after the operation, clinical findings are still fair and the patient is interested in surgical treatment for the teeth in the lower jaw (**Figure 13.**).

## Conclusion

Progression in periodontal disease leads to bone loss and periodontal break down. It also has a potential to endanger dental pulp. It is not always easy to establish diagnosis of teeth with endodontic and periodontal combined problems. Beside clinical experience and scientific knowledge of the clinician, proper diagnostic tests and various diagnostic aids has to be used in order to achieve accurate diagnosis. Good clinical and medical history is essential. Endodontic treatment and periodontal restorative therapy induces tissue regeneration and results in reduction in probing depth and gain in clinical attachment level. A multidisciplinary approach and combining periodontal regenerative and endodontic microsurgery, good therapeutic effect and best outcome for endodontic-periodontal lesion can be achieved, as it was in our case study.

## Declaration of interest:

The authors declare that they have no conflict of interest. This study was not sponsored by any external organization.

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