



## Case Report

## Multidisciplinary management of concomitant pulpal and periodontal lesion: A case report



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### المخلص

في تقرير الحالة هذه؛ نصف معالجة حالة شاملة لمنطقتي اللب واللثة معا. تقدم مريض في سن ٣١ بأعراض التهاب دواعم السن الذروي للسن رقم ٣٦ نتج عن علاج فاشل للثة والتهاب عدواني عام لدواعم السن. وبعد تقليح كامل الفم والتخطيط للجذر، بدأنا بعلاج عصب السن رقم ٣٦. وفي حين تم بنجاح علاج القناتين البعيدة والشندقية الوسطى، حدث اختراق للقناة اللسانية الوسطى، وتمت معالجتها باستخدام المركب المعدني ثلاثي الأكسدة. قمنا بجراحة دقيقة ذروية للجذر الوسطى بالإضافة إلى تنظيف جراحي لدواعم اللثة للربع الأيسر السفلي. وبعد ذلك بثلاثة أسابيع قمنا بجراحات استئصالية وتجديدية لثوية للأرباع الثلاثة الباقية. وبسبب فترة الستة أشهر اللازمة للعلاج، قمنا بالجراحة التجديدية للربع الأيسر السفلي. وعند الكشف على المريض بعد ستة أشهر من العلاج تبين أن الجذر الوسطى قد تم شفاؤه بالكامل إضافة إلى تعافي الجذر الأبعد إلى حد كبير. وقد ساهم نهج متعدد التخصصات واستخدام الأدوات الحديثة في تحقيق نتائج جيدة.

**الكلمات المفتاحية:** نهج متعدد التخصصات؛ اللبي واللثوي؛ تقليح كامل الفم؛ تخطيط الجذر؛ جراحة اللثة

### Abstract

In this case report, the management of a concomitant endodontic-periodontal lesion case is described. A 31-year-old patient presented with symptomatic apical periodontitis of tooth #36 due to failed endodontic treatment and a generalized aggressive periodontitis. Following full-mouth scaling and root-planing, a root-

canal retreatment (tooth #36) was initiated. While the distal and mesio-buccal canals were successfully treated, a transportation perforation of the mesio-lingual canal occurred and was repaired by the MTA. An apical microsurgery of the mesial root combined with surgical periodontal debridement for the lower left quadrant was performed. Three weeks later, resective and regenerative periodontal surgeries of the other 3 quadrants were accomplished. Because of the 6-month post-operative healing, the regenerative periodontal surgery for the lower-left quadrant was performed. The 6-month post-operative recall showed complete healing of the mesial root lesion and reduction of the distal root lesion. The multidisciplinary approach and advanced armamentarium contributed to favourable outcome.

**Keywords:** Concomitant; Endodontics; Endo-perio lesions; Multidisciplinary approach

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### Introduction

The dental pulp and the surrounding periodontium communicate through dentinal tubules, lateral canals, developmental grooves and apical foramina, which are potential portals for transmission of disease between both tissues. Diagnosis and therefore differentiation of endodontic and periodontal diseases is challenging because they may

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have similar clinical characteristics and may impact each other.<sup>1</sup>

Several classifications have been suggested for periodontal-endodontic lesions. Torabinejad & Trope classified them as endodontic origin, periodontal origin, combined endodontic-periodontal lesions, separate endodontic and periodontal lesions, lesions with communication or lesions without communication.<sup>2</sup> A recent classification categorized lesions based on the primary disease with its secondary effect into retrograde periodontal disease (either as primary endodontic lesion with drainage through the periodontal ligament or primary endodontic lesion with secondary periodontal involvement), primary periodontal lesion, primary periodontal lesion with secondary endodontic involvement, combined endodontic-periodontal lesion, or iatrogenic periodontal lesions.<sup>3</sup>

However, a commonly used classification categorizes endodontic-periodontal lesions as Primary Endodontic lesions, Primary Periodontal lesions and Combined lesions.<sup>4</sup> Another category, Concomitant Pulpal and Periodontal lesions, was added later and includes the two separate lesion types simultaneously in which both disease states exist but with different causative factors and with no evidence that either disease has influenced the other.<sup>5</sup>

The combined endodontic-periodontal lesions were investigated; thus, different treatment strategies were described.<sup>6–8</sup> Oh et al. proposed the following 4-phase treatment algorithm: (i) pre-surgical (determining periodontal/regenerative prognosis), (ii) endodontics, (iii) periodontal surgical, and (iv) post-guided-tissue regeneration reevaluation protocol.<sup>6</sup> Tseng et al. reported treatment of a true combined endodontic-periodontal lesion<sup>9</sup> by a nonsurgical root-canal-retreatment followed immediately by a periodontal treatment including guided tissue regeneration. Karabucak and Setzer treated two cases; confirming the effectiveness of an apical surgery supported by periodontal guided tissue regeneration.<sup>10</sup>

The aim of this work is to describe the multidisciplinary clinical management of a concomitant endodontic-periodontal lesion.

### Case report

A 31-year-old female patient presented to the endodontic specialty clinic at the dental hospital, King AbdulAziz University, KSA, with a chief complaint, "I have pain when chewing on lower left molars, and a bad mouth smell." Dental history revealed a five-year old root-canal-treatment (tooth #36) and multiple permanent restorations. Clinical examination (Figure 1A) showed a defective composite restoration on tooth #36, a missing tooth #46, normal response to cold test for #37 and *Halitosis*, despite fair oral hygiene. Teeth #36 and #37 had 5–6 mm buccal and lingual periodontal pockets. Tooth #36 showed buccal grade-1 furcation involvement with grade-1 mobility. Teeth #37 and #47 showed buccal grade-2 furcation involvement with grade-2 mobility. The three teeth were tender on percussion and palpation. Radiographic examination revealed a previous substandard root-canal-treatment of tooth #36 with apical radiolucency (Figure 1B) and severe vertical bone loss at the proximal area between teeth #36 & #37 and the mesial area of #47 (Figure 1C). A generalized aggressive periodontitis and a

previously treated tooth (#36) with symptomatic apical periodontitis were the final diagnosis. The treatment plan involved saving tooth #36 and included the following stages:

#### 1. Initial Periodontal Treatment

Full-mouth scaling and root planing were combined with adjunctive antibiotic coverage as described by Lindhe et al. (Augmentin 1 gm twice/day and Metronidazole 500 mg 3 times/day for 2 weeks).<sup>8</sup>

#### 2. Endodontic Treatment (tooth #36)

The defective composite restoration was removed, and the tooth (#36) was rebuilt with glass-ionomer cement (GIC) (Fuji IX GP<sup>®</sup>, GC, Chicago, IL). The old gutta-percha filling was removed using ProTaper Universal Retreatment<sup>®</sup> files (Dentsply Tulsa Dental, Tulsa, OK) (Figure 1D–F). The distal and mesio-buccal canals were successfully cleaned and shaped up to X3 ProTaper-Next, files (Dentsply Tulsa Dental, Tulsa, OK). However, a transportation perforation occurred while negotiating the mesio-lingual canal. The distal and mesio-buccal canals were obturated with gutta-percha and sealer using the continuous wave technique. The perforated mesio-lingual canal was repaired with Pro-Root MTA cement (Dentsply Tulsa Dental, Tulsa, OK). The tooth was restored with GIC for one week and later replaced with composite (GC America, Chicago, IL) (Figure 1F).

#### 3. Surgical Endodontic and Periodontal Treatment

A decision on apical microsurgery of the mesial root combined with a surgical periodontal debridement was agreed. A preoperative Cone-Beam-Computerized-Tomography (CBCT) showed 4.5 mm between the mesial root apex (tooth #36) and the mental foramen and 4.4 mm between the root apices and the mandibular canal. The CBCT also showed 8.8 mm bucco-lingual thickness of the mesial root. Following local anaesthesia, a vertical incision mesial to tooth #34 and a sulcular incision extending from tooth #34 to #37 distal surface, a triangular full-thickness flap was reflected to perform periodontal debridement (Figure 2). Under microscope magnification and following an osteotomy, the apical 4 mm of the mesial root (tooth #36) was resected, the canals were identified and two 3 mm retrograde cavities were prepared using surgical ultrasonic tips (Satelec/Acteon, Merignac, France) and were filled with MTA (Figure 3). The flap was replaced, sutured and a post-surgery radiograph was taken. Three weeks later, resective and regenerative periodontal surgeries of the other three quadrants were performed. (Figure 4A–C). Six months post-apical surgery, good healing of periapical and periodontal tissues of tooth #36 was observed clinically and radiographically (Figure 4D and E). Therefore, the regenerative periodontal surgery for the lower left quadrant using a bone graft and a collagen membrane were performed (Figure 4D–I).

#### 4. Follow-up

The 6-month post-periodontal surgery clinical and radiographic follow-up revealed normal response of teeth

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