



**Resolution of Furcation Bone Loss Associated with Endodontic Lesion After
Nonsurgical Root Canal Treatment: A Case Report**

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Abstract

Periapical pathologies and furcation lesions are common disturbances related to inflammation resulting from the pulp necrosis. These disturbances are a clinical dilemma because making a differential diagnosis and deciding a prognosis are difficult. This case report demonstrates a tooth with periapical and furcation lesions. It is shown to be treated with multi-visit endodontic treatment. The treatment was completed in three sessions and calcium hydroxide paste was used as intracanal medicament.

Key Words: Furcation lesion, calcium hydroxide, endodontic treatment.

Introduction

Periodontium and pulp have not shown a difference in pathological and functional responses in spite of having histologically distinct tissues (1). It has been shown that they have a close relationship according to vascular and tubular functions (2). However, the interaction between the pulp and periodontium occurs by apical foramen (3).



Periodontal ligament and adjacent alveolar bone lesions may originate from residual dental pulp tissues or the periodontium infections (4). It has been observed that periradicular bone loss frequently occurs in necrotic pulp (5). Although around the teeth root apiks with necrotic pulp could be frequently shown alveolar bone loss, it could be observed in the furcation area of the teeth (4).

Furcation bone loss secondary to pulpal pathosis is believed to result from the communication between the pulpal and periradicular space via lateral and accessory canals (4). The edema has been occurred at the beginning of the pulp tissue disease caused by periodontal tissue inflammation. Therefore, periodontal fibrils of alveolar bone are separated and alveolar bone resorbtion are observed by process inflammation and the resorbtion zone acts as a fistula tract (6). Periodontal lesions are recovered after root canal treatment.

In the current case report, after a successive root canal treatment, the healing of primary endodontic secondary periodontal lesioned mandibular first molar tooth having a furcation problem without any periodontal surgical treatment has been shown.

Case Report

A 23 years old healthy, non-smoker patient suffered from severe tooth pain. Furcation of mandibular first molar tooth had slightly hiperemia although overall periodontal status was stable. It responded to neither the electrical pulp test nor the cold test. However, the patient suffers from severe pain when applied to percussion. In the periapical radiography images of furcation of the tooth towards the root apex, decreased bone density, alveolar bone loss and space in the surrounding Lamina Dura are observed in the furcation. Initial diagnosis was primary endodontic lesion illness secondary to periodontium which occurred as a result of pulp necrosis.



Figure 1: Initial radiography before treatment.

At the first session, the root canal treatment was initiated. Expansion of root canals of the tooth of which endodontic access cavity opened was instrumented with the stainless steel files (Diadent K-Files, Seoul, Korea) to size #30. Irrigations agent used in 2,5 % NaOCl and 17 % EDTA (Roth International Ltd., Chicago, IL). Calcium hydroxide paste (Ultracal, Ultradent Products, USA) mixed with distilled water has been applied to root canals through lentilo.A- Four-week treatment period repeated two times. After determining of the tissue healing begins radiographic, the tooth root canals was filled with gutta-perca (Meta Gutta Perca point, Meta Biomed Inc., USA) and sealapex (Kerr, Romulus MI, USA) sealers.

After closing the access cavity with glass ionomer cement, the permanent restoration of teeth was carried out with composite resin restoration (Filtek Z 250, 3MESPE).



Figure 2: Radiographic image of the second session



Figure 3: Radiographic image of third session

In the result radiograph, increase in the root apex of the bone density and bone deposition in furcation is observed. Lamina Dura is also returned to normal structure.



Figure 4: Radiograph after root canal filling.

Discussion

An endodontic infection of necrotic pulp tooth plays an important role to spread bacteria to the root canal system and result with the formation of periradicular pathologies (7). In the absence of bacteria, periapical inflammatory reaction is not progressed and damaged tissues heal rapidly (8-9). The intensities of an inflammatory reaction that occurs in the pulp and periapical tissues are proportional with the number of microorganisms, and microorganisms to the contact times (10).

Even effective use of a mechanical preparation and antimicrobial washing solutions, it is difficult to eliminate one session for the root canal infection in clinic (11-12). Therefore, the endodontic treatment of tooth with necrotic pulp must be completed more than single treatment session (13).



Calcium hydroxide has been featured as the best medicament in canal with the properties of active antibacterial activity as it induces hard tissue chemically and accelerates the periapical healing of tissues (14).

As a result, multi-visit endodontic treatment is a sufficient option for treatment of furcation lesions occurred by endodontic pathologies.

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International Journal of Basic and Clinical Studies (IJBCS)

2012;1(1): 54-60. **Uysal I, Kaya S**

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