Non-surgical endodontic management of the combined Endo-perio lesion  
Rahul Kumar, Suvarna Patil, Upendra Hoshing, Ashish Medha, Rushikesh Mahaparale

Abstract
Endodontic–periodontal lesions offer a constant challenge to the clinician for diagnosis, treatment and prognosis of the teeth that are of great concern. Treatment and prognosis of endodontic–periodontal diseases vary depending on the cause and the correct diagnosis of each specific condition. This article presents successful healing of combined endo-perio lesions after non-surgical endodontic management with long term follow up.

Key Words: Endo-Perio Lesion; Periapical Abscess; Pulp Necrosis; Secondary Periodontitis.

Received on: 14/04/2011  
Accepted on: 14/06/2011

Introduction
The pulp and the periodontium are closely related as they are ectomesenchymal in origin, and pathways of communication between these structures often determine the process of disease in these tissues. (1) Pulp tissue degenerates due to a number of reasons such as caries, restorative procedures, restorative materials, chemical insult, thermal insult, trauma and periodontal disease. (2) Proper endodontic procedures and techniques are the key factors for treatment success of endo-perio lesion. (3, 4) This paper reports the management of three endo-perio lesions after non-surgical endodontic management with long term follow up.

Case Report 1
A 35 year old female patient reported to the Department of Conservative Dentistry and Endodontics, Vasantdada Patil Dental College and Hospital, India, with the chief complaint of mild pain and swelling on right back region of the jaw. The medical history was noncontributory. Intra oral examination revealed deep mesio-occlusal carious lesion with mandibular right first molar and disto-occlusal carious lesion with mandibular right second premolar. Probing depth observed was 7mm mesial to tooth 46 with grade II furcation involvement. Palpation revealed tenderness on percussion and grade I mobility.

Pretreatment radiographic examination and pulp vitality test suggested combined endo-perio lesion of non-vital mandibular right first molar (Figure 1a). Radiographic examination revealed severe bone loss around the mesial portion of distal root, interradicular area and the apex of mesial root of mandibular right first molar. Initially root canal therapy followed by periodontal regenerative surgery was suggested.

The tooth was isolated under rubber dam. Adequate endodontic access cavity was prepared after excavation of caries and working length radiograph was taken after initial identification of three canals with #15 K-files (Figure 1b). Cleaning and shaping of the root canal was performed by using stainless steel file with a crown-down technique under copious irrigation with saline, 5% sodium hypochlorite solution and 17% EDTA. All canals were dried and an interappointment dressing with calcium hydroxide was placed and a temporary filling was placed in the access cavity. Patient was kept on medication.

Three weeks later, the tooth was asymptomatic and soft tissues looked normal. After rubber dam isolation, the calcium hydroxide was removed from the canals using EDTA and sodium hypochlorite 5.25%. Master cone radiograph was taken. The canals were finally rinsed with normal saline, dried with absorbent points and obturation was performed using cold lateral compaction of gutta-percha using AH Plus resin sealer. An IRM temporary restoration was placed in the access cavity and patient was recalled after one week for periodontal regenerative procedure (Figure 1c).

Following the three months follow up tooth was asymptomatic and there was no permanent restoration in the tooth. The probing depths were 3mm all around the tooth and no inflammation were seen on soft tissues. Radiographic examination revealed evidence of regeneration of the periradicular bone. Thus it was decided that the patient should be followed up before undergoing

Figure 1a. Preoperative, 1b. working length, 1c. Temporary restoration, 1d. Permanent Restoration, 1e. 1 year Follow-up
periodontal surgery. At this time, IRM was removed and cavity was restored with silver amalgam restoration (Figure 1d). The patient returned one year after the placement of the permanent restoration and tooth was asymptomatic, probing depths were still 3mm all around the tooth and soft tissues appeared free of inflammation. Radiographic examination revealed dramatic regeneration of the periradicular tissues (Figure 1e). The tooth was symptom-free since completion of the root canal; hence, it was decided to restore the tooth with full coverage metal crown.

**Case Report 2**

A 53 year old male patient reported to our endodontic department with the chief complaint of pain in the right back region of lower jaw. The patient was diabetic and was under medication. Intra oral examination revealed occlusal carious lesion with mandibular right first molar, tenderness on percussion and deep periodontal pocket with probing depth of 13 mm was associated tooth with grade II furcation involvement.

Pretreatment radiographic examination and pulp vitality test suggested combined endo-perio lesion of non-vital mandibular right first molar. IOPA radiograph showed bone loss around the distal root, and interradicular area of mandibular right first molar (figure 2a). Scaling and polishing followed by root canal treatment was suggested. As the patient was diabetic the periodontal surgery was postponed. Though scaling and polishing was done. The root canal treatment was completed as described in case one and the patient were kept under follow-up (Figure 2b).

Tooth was asymptomatic, when patient returned after three months, periradicular tissues showed sign of regeneration and probing depth was 6 mm (Figure 2c). Follow up examination after one year showed probing depth was 3 mm all around the tooth and evidence of regeneration of periradicular tissue on radiographic examination (Figure 2d).

**Case Report 3**

A 14 year old female reported to our outpatient clinic with the chief complaint of deep occlusal caries and intraoral swelling associated with mandibular left first molar. The tooth was tender on percussion and pus discharge was seen from gingival sulcus after probing. A probing depth was 12 mm was present.

Pretreatment examination suggested combined endo-perio lesion of non-vital mandibular left first molar. Radiographic showed bone loss all around the root, and interradicular area (Figure 3a). Scaling and polishing followed by root canal treatment and further periodontal surgery was suggested.

**Discussion**

Endodontic-periodontal lesion is a clinical manifestation of the pathologic / inflammatory inters communication between pulpal and periodontal tissues. On the basis of the pathologic origin, Simon et al classified endodontic-periodontal lesions into primary endodontic lesions, primary endodontic lesions with secondary periodontic involvement, primary periodontic lesions, primary periodontic lesions with secondary endodontic involvement, or true combined lesions.(5) Later, an additional classification was added by Belk and Gütmen as concomitant endodontic and periodontal lesions.(6) Endodontic-periodontal combined lesion is a true challenge. Its management requires thorough understanding of wound healing process involving both endodontic
and periodontal complex. The treatment of endodontic-periodontal combined lesions requires both endodontic therapy and periodontal regenerative procedure. The success rate of the endodontic-periodontal combined lesion without a concomitant regenerative procedure has been reported to range from 27%–37%.(7)

The main factors taken into consideration are pulp vitality and type and extent of the periodontal condition. In addition, a negative response to thermal stimuli and lack of mobility of the tooth may indicate that the lesion is purely of endodontic origin. In such cases root canal therapy should be performed and periodontal therapy avoided, or at least delayed, until one or two months after the root canal has been performed.(8, 9) Periodontal therapy is then performed only if the attachment apparatus does not seem to be improving. Follow-up examination is crucial when attempting to evaluate the prognosis of the treated tooth.

Analyzing a series of retrospective studies, Blomlöf et al concluded that endodontic infection promotes periodontal pocket formation and should be regarded as a risk factor in periodontitis progression.(8) Root canal disinfection is crucial when attempting to achieve regeneration of the periradicular tissues.(10) In this case series, there were deep probing depth along more than one surface of the tooth. Radiographically there was extensive bone loss around the root and interradicular area, however successful disinfection and filling of the root canal system of teeth led to regeneration of the attachment apparatus without further periodontal therapy.

In our cases, calcium hydroxide was used as the intracranial inter-appointment dressing to disinfect the root canal system further and to evaluate the improvement of the surrounding tissues at the second appointment, at which time it was decided to fill both teeth. Complete healing of periradicular bone was seen after one year in all three cases.

**Conclusion**

This case report demonstrated that endodontic lesions with involvement of the attachment apparatus can be successfully healed by performing adequate root canal treatment with great emphasis on disinfection of the root canal system. Teeth that appear to have a periodontal problem of endodontic origin have an excellent prognosis but it depends on the extent of the periodontal disease and assessment of the therapeutic prognosis, presence or absence of periapical radiolucency, tooth mobility, properly performed root canal treatment, and appropriate healing time.

**Authors Affiliations:** 1. Dr. Rahul Kumar, BDS, Post Graduate Student, 2. Dr. Suvarna Patil, MDS, Professor and Head, 3. Dr. Upendra Hoshing, MDS, Professor, 4. Dr. Ashish Medha, MDS, Professor, 5. Dr. Rushikesh Mahaparale, BDS, Post Graduate Student, Dept. of Conservative Dentistry, Vasantdada Patil Dental College, Maharashtra, India.

**References**


**Address for Correspondence**

Dr. Rahul Kumar, BDS,
Postgraduate Student,
Dept. Of Conservative Dentistry,
Vasantdada Patil Dental College,
A/P Kavalapur,
Maharashtra, India 416306
Ph: +91-9372180472
E- Mail: dr.rahul1982@gmail.com

Source of Support: Nil, Conflict of Interest: None Declared