

Non Surgical Management of Combined Endodontic-Periodontal Lesion

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ABSTRACT

Endo-perio lesions primarily occur by array of communication pathways like apical foramen, lateral and accessory canals and dentinal tubules. Diagnosis of Endo-perio lesions is often challenging and complicated by overlapping signs and symptoms of different types of disease. This may delay the diagnosis and hence the correct treatment. Traditional endodontic and periodontal therapy is treatment of choice, however complex situation may require alternative treatment option like respective or regenerative therapy. The case described here was successfully managed by non surgical endodontic and periodontal therapy. On six month follow up patient reported with improved clinical parameters and resolution of signs and symptoms.

Keywords: Endodontic treatment, Endo-Perio lesions, Non surgical periodontal therapy.

INTRODUCTION

Transmission of bacteria between pulp and periodontal tissue can occur in either direction through various communication pathways like apical foramen, lateral canals, accessory canals, dentinal tubules, developmental defect and other iatrogenic defects of teeth (1). Dentinal tubules has been highlighted as significant channel of communication by various in-vitro studies. Akapta and Belchman (2) showed invasion of radicular dentine by *Streptococcus* species from root canal after specimen of extracted human teeth were inoculated with bacteria. Perez et al (3) also observed migration of *Streptococcus sanguis* inside dentinal tubules by both scanning microscope and light microscope. However two other bacterias used in the study *A. naeslundi* or *P. intermedia* failed to penetrate dentinal tubules. Nagaoka et al (4) reported significant difference in invasion rate of bacteria while studying variation in bacterial penetration inside dentinal tubules of vital and non vital teeth. Odontoblastic process, collagen fibers and dentinal fluid were the factors considered responsible for increased resistance to bacterial invasion inside dentinal tubules of vital teeth. Dye also penetrates from external surface inside dentinal tubules in proportion to exposure time in saliva (5).

Accessory canals may also act as important pathway between Pulp and periodontal tissues. Gutman found incidence of patent accessory canal to be 28.4% in furcation region (6). Lowman et al (7) using radiopaque dye reported 59% patent accessory canal in coronal and middle third of molars. Vertucci reported incidence of 46% lateral canal in furcation region using dissecting microscope and 56% incidence of accessory foramina in pulp chamber floor and furcation region using scanning electron microscope (8, 9). Goldberg (10) in an scanning electron microscopic study found higher incidence of accessory foramina than incidence of orifice in the pulp chamber floor (60.0% and 12.5%, respectively).

Pulpal infection has been considered local modifying factor for progression of periodontal lesion, however, there is controversy regarding spread of infection from periodontium to pulp in the literature with some authors reporting pulpal necrosis due to periodontal disease while others reporting normal teeth regardless of severity of periodontal disease (11). Diagnosis of endo-perio lesion is often complicated by overlapping signs and symptoms which increases chance of misdiagnosis and wrong treatment. To successfully manage Endo-Perio lesion accurate diagnosis is prerequisite. This case report describes successful management of combined endo-perio lesion by tradition endodontic and periodontal therapy.

CASE REPORT

A 35 year old male reported to the Department of Conservative Dentistry and Endodontics with chief complaint of pain in lower right back region of mouth since one month. On examination, there was deep dental caries in association with 46, which was tender on percussion. Tooth was no vital on pulp testing and had grade III mobility. On periodontal examination – there was deep periodontal pocket 7 mm and 8mm buccally and lingually in relation to 46. Probing with nabers probe revealed grade III furcation defect. Radiographic examination revealed periapical radiolucency with respect to 46. Diagnosis of endo-perio lesion of primary endodontic with secondary periodontal involvement was made.

Endodontic treatment : After achieving local anesthesia (2% lidocaine with 1:100,000 epinephrine), under rubber dam isolation, caries were excavated, and the access cavity was prepared. The working length was determined with an electronic apex locator (Root ZX; J Morita, Irvine, CA) and then confirmed radiographically. The master apical file size for each canal was set at 3 sizes larger than the first binding file. After each instrument change, 3% sodium hypochlorite (NaOCl; Sainsbury plc, London, UK) using a 27-G endodontic syringe (Monoject; Sherwood Davis & Geck, St Louis, MO) was used during the procedure, and final irrigation was performed with 5 mL 17% EDTA (Prevest Denpro Ltd, Jammu, India) for 1 minute followed by a final rinse with 5 mL 3% NaOCl. Canals were dried with paper points and then filled with paste made by mixing calcium hydroxide powder (Roth International Ltd, Chicago, IL) with sterile saline using a Lentulo spiral. The tooth was restored with temporary restoration. The patient was recalled after 14 days, and paste was removed with Hedstroem files (Dentsply Maillefer) and copious irrigation with 3% NaOCl followed by a final rinse of 5.0 mL 17% EDTA and 5.0 mL 3% NaOCl. Then, canals were obturated with gutta-percha and ZOE-based sealer using the lateral condensation technique. The coronal pulp space was sealed up to the level of the floor of the pulp chamber with amalgam after the application of varnish.

Periodontal treatment: Scaling and root planning (SRP) was performed at the same appointment when obturation was completed with ultrasonic scaler (Suprasson P5 Booster) and hand instruments (Hu-Friedy) until a clinically hard, smooth surface was achieved. Reinforcement of oral hygiene procedures and professional supragingival oral prophylaxis was provided at follow-up visits. Follow-up was performed at 3 and 6 months of endodontic treatment (Fig 1).



Fig. 1: Preoperative Photograph (A) and Radiograph (B); 6 mo follow up radiograph

DISCUSSION

Amongst array of factors responsible for development of endo-perio lesions, primary etiological factor remain microbial flora. Diagnosis and management of combined endo-perio lesions remain challenging and require careful assessment of all factors like history and clinical presentations. Management of endo-perio lesion consists of traditional endodontic and

periodontal therapy. Endodontic treatment has high success rate and allow periodontal healing by removing microbial challenge from the affected root canals. Complex situation which do not respond to traditional approach may require alternative management option like resective and regenerative treatment strategies (12, 13).

In this case first endodontic therapy was performed then non surgical periodontal therapy. Endodontic therapy when adequately performed, results in healing of the endodontic component, however the prognosis in combined endo-perio lesions rests with the efficacy of periodontal repair/regeneration triggered by periodontal treatment procedures. In this case, following endodontic treatment and initial non surgical periodontal therapy, the periodontal lesion responded favorably and significant reduction in the clinical parameters was recorded. This confirmed a secondary periodontal involvement along with primary endodontic component.

Calcium hydroxide because of its anti bacterial and anti inflammatory properties was utilized as intracanal medicament (14). Obturation was performed in the second appointment followed by SRP procedures. To augment the coronal seal in this case a full coverage metal crown was placed.

During the 6th month visit of the patient there were no symptoms of any pain or discomfort. In this case, we observed a reduction in probing depth from 7mm to 4mm buccally and from 8mm to 4mm lingually in six months with a radiographic bone fill after six months. There was significant reduction in mobility as well.

CONCLUSION

Non surgical periodontal therapy was successful in this case in resolving signs and symptoms of Endo-Perio lesion as well as there was satisfactory bone fill on 6 month follow up on intra oral periapical radiograph.

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