

# MANAGEMENT OF A HOPELESS TEETH WITH ENDO – PERIO LESION : SALVAGING A MOLAR

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## ABSTRACT

Pulpo-periodontal lesion is one of the most complicated condition to be treated as it needs more accurate diagnostic skills and precise treatment plans. The major challenge in the treatment of the pulpo-periodontal lesion is to treat the endodontic infection along with the regeneration of the lost periodontal structures associated with the lesion. The prognosis of the tooth depends upon the extension of the periodontal structure loss around the tooth. Root canal therapy and guided tissue regeneration technique with bone grafts and collagen membranes serve as a best mode of treatment for pulpo -periodontal lesions. This case report describes the salvaging of a hopeless teeth with an Endo-Perio lesion by an interdisciplinary approach.

**KEYWORDS:** Endo-Perio lesion; Guided Tissue Regeneration; Bone graft, Collagen Membrane.

Received : 05.08.2019

Accepted : 03.09.2019

Published : 27.09.2019

## INTRODUCTION:

Periodontal tissue destruction can be caused by many etiological factors. The infection causing periodontal tissue destruction may have their origin either from the pulpal tissues through the apical foramen or from the periodontal structures. The combined involvement of both pulpal and periodontal lesion is termed as Endo-Perio lesion. Based on the involvement of the tissue structures, it is classified as primary endodontic lesion, primary endodontic lesion with secondary periodontal involvement, primary periodontic lesion, primary periodontal lesion with secondary endodontic involvement and true combined lesion.<sup>1</sup> In true combined lesion, both infections develop independently and progress until they join together. Dental pulp and periodontium have a very close relation as they are of ectomesenchymal origin. The relationship between the pulpal and periodontal infections was first described by Simring and Goldberg in 1964 and they account for about more than half of the tooth mortality.<sup>2</sup> The destruction of the periodontal apparatus is caused by the necrosis of pulp through the apical foramen and sometimes through the accessory canals which are located at different levels of root.<sup>3</sup> When the destruction of the periodontal tissues progresses into periodontal pocket formation, the chances of reversal of the endodontic lesion with time gets reduced. The main goal of treatment is not only maintaining the natural dentition but also to restore the lost periodontal structures. Preservation of the natural tooth should be the ultimate goal of periodontal therapy. The endo-perio lesion is usually treated with root canal therapy depending on the vitality of the affected tooth followed by Guided Tissue Regeneration using bone grafts and collagen membranes. This case report describes the salvation of a hopeless teeth with an endo- perio lesion by interdisciplinary approach.

## CASE REPORT:

A 16-year old male patient reported to the Department of Periodontics with the chief complaint of painful swollen gums in the upper right back tooth region for past 5 days. Patient had no medical history. Past dental history revealed that the patient had undergone treatment for the same twice before 6 months. On intra-oral examination a swelling measuring about 3 x 3 mm was seen in the attached

gingiva in relation to 16. Initial probing depth of about 15 mm was elicited (Fig 1) and tooth exhibited Grade II mobility. The tooth (16) was tender on percussion and was grossly decayed. IOPA of 16 showed dental caries approximating the pulp chamber of 16, widening of the periodontal ligament space was seen in 16 and bone loss involving the furcation and apical third of the mesio buccal, distobuccal and palatal roots of 16 (Fig 2). Based on the clinical and radiological evidence it was diagnosed as a true combined lesion. Initial treatment plan was extraction of 16. Since the patient was not willing for extraction alternative plan was made. Patient underwent initial Phase I therapy of scaling and root planing. Patient was put under antibiotic therapy of Amoxycillin 500mg and Metronidazole 400mg thrice daily for five days and NSAID pain killer Aceclofenac 100mg twice daily for three days.

After 7 days, intra-oral examination showed reduction of swelling in size. The tooth (16) was tested for vitality with Electric Pulp tester (EPT) which showed no response indicating the tooth was non-vital. Hence root canal therapy was planned in 16. Access opening was done, canals were located, cleaning and shaping done and Calcium hydroxide intracanal medication was placed. Patient was recalled after 1 week and obturation was done in 16 ( Fig 3). Patient was recalled after 4 weeks for review



Fig 1 : Swelling in relation to 16 and Initial probing depth of about 15mm.



Fig 2 : IOPA of 16 showing dental caries and bone loss involving the furcation of 16.

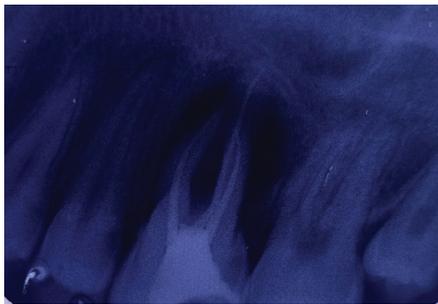


Fig 3 : IOPA showing root canal treated 16.

**SURGICAL PROCEDURE:**

After 4 weeks the patient was asymptomatic. Grade II mobility had completely reduced and the tooth became clinically firm. The probing depth remained to be 15 mm and had a Grade II furcation involvement of about 12mm which was measured using Naber’s probe (Fig 4). Hence a localised flap surgery was planned after explaining the procedure to the patient and obtaining consent from the parents. The surgical site was isolated and anaesthetised using 2% lignocaine hydrochloride (1:2,00,000 adrenaline). Crevicular, Interdental incisions were placed in relation to 15, 16 and 17. Two vertical incisions were placed in relation to 15 and 17 with a wider base to enhance the blood supply to the flap. A full thickness mucoperiosteal flap was reflected and granulation tissue was removed (Fig 5). The osseous defect was filled with Osseograft (Xenograft) (Fig 6). Healiguide collagen membrane was placed over the bone graft (Fig 7). The flap was approximated using single independent sling suture and the vertical releasing incisions were approximated using horizontal matrix suture using 3-0 silk suture (Fig 8). Periodontal dressing was place over the surgical site (Fig 9)



Fig 4 : Furcation involvement of about 12mm using Naber’sprobe.



Fig 5: Full thickness mucoperiosteal flap reflected, degranulation done showing osseous defect.



Fig 6 : Bone graft (Osseograft) placement in the osseous defect of 16.



Fig 7 : Collagen membrane (Healiguide) placed over the bone graft.



Fig 8 : Flap approximated using independent sling and horizontal mattress sutures (3-0 silk).



Fig 9 : Periodontal dressing placed over the surgical site.



Fig 12 : Post-operative IOPA showing bone formation around 16 region.

### POSTOPERATIVE INSTRUCTIONS:

Analgesics were prescribed twice daily for three days for post-operative pain management. 0.2% chlorhexidine digluconate was also prescribed to be used twice daily for 3 weeks. The patient was asked not to brush at the surgical site for 2 weeks.

### RESULT:

After 7 days of surgery, periodontal dressing and sutures were removed, healing was satisfactory. Patient was again assessed for healing at 3 months (Fig 10) The Intraoral Periapical Radiograph at the time period of 3 months showed excellent bone formation (Fig 12), there was a reduction in pocket depth to 3mm (Fig 11). The tooth became clinically stable and functional.



Fig 10 : Post-operative view at 1 month.



Fig 11 : Reduction of pocket depth to 3mm.

### DISCUSSION:

The successful outcome of the endo-perio lesion management solely depends on the precised diagnosis. The larger the periodontal defect more it affects the outcome of the treatment. The diagnostic tools for endo-perio lesion includes visual examination, palpation, percussion, tooth mobility, Intra-oral radiographs and pulp testing.<sup>4</sup> Both endodontic and periodontal infections are caused by mixed anaerobic microorganisms. But the pathways of infection are still a controversy. The two major pathways through which the infection spreads are anatomic pathway and nonphysiologic pathways.<sup>5</sup> The Anatomic pathways includes the connection of pulp and periodontium through the apical foramen. There are also other multitude of connections other than the apical foramen which includes furcation, collateral, lateral, secondary, accessory, intercanal and reticular canals.<sup>6</sup> Other than the apical foramen and the lateral canals there is a third mode of spread of infection to the periodontium through the dentinal tubules. The spread of bacteria through the tubules is very limited as the radius of the dentinal tubules is diminished about 5-40% by the odontoblastic process, collagenous fibers and the sheet like lamina limitans that are present in the dentinal tubules. The other pathways include the spread of infections through the perforations of root structures caused during access to the pulp chamber or due to improper manipulation of endodontic instruments. Vertical root fractures constitutes the second group of artificial pathways that paves way for the communication of the pulp and the periodontal structures. Vertical root fractures is caused in both vital and non-vital tooth by trauma. Fracture may continue to the coronal aspect of the tooth in vital tooth called as cracked tooth syndrome

(Cameron 1964)<sup>7</sup>. In endodontically treated tooth it is reported that vertical fractures occur more in canals filled with lateral condensation technique than that of canals filled with single cone technique (Morfis 1990)<sup>8</sup>. In this case report, the tooth was exhibiting Grade II mobility initially with extensive alveolar bone loss around the mesiobuccal, distobuccal and palatal roots. Initially it was indicated for extraction; since the patient was not willing for extraction and was more concerned about the natural tooth other approaches was planned. Initially the tooth exhibited Grade II mobility but after root canal therapy the mobility disappeared and the tooth became clinically firm. So splinting was not carried out; instead occlusal adjustments were done. Since there was no reduction in pocket depth and the involvement of furcation a localised flap surgery was performed. After three months of surgery with grafting procedures there was good bone formation around the root of 16 and the tooth had become clinically stable and functional.

### CONCLUSION:

The pathogenesis of the endo-perio lesion is a variable one which may be simple or a complex one. To diagnose and manage a pulpo-periodontal lesion a clinician should have an expert and thorough knowledge about the lesion. Even though there are various specialities in dentistry a clinician should perform restorative, endodontic and periodontal management either in a single mode of management or as a combination. Therefore to achieve excellent clinical outcome for these lesions, a clinician should perform a multidisciplinary approach. As natural dentition cannot be replaced by any modes of prosthesis, a tooth should never be extracted unless and until its final hope is lost. Proper diagnosis and timely management is a key factor which plays a major role in treatment of an endo-perio lesion.

### FINANCIAL SUPPORT AND SPONSORSHIP:

Nil

### CONFLICTS OF INTEREST:

There are no conflicts of interest.

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