

Sequential Approach in Endo-Perio Lesion Treatment: A Case Report

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ABSTRACT

Introduction: Diagnosis and treatment planning become more challenging when pulpal and inflammatory periodontal disease are simultaneously present. Proper diagnosis and treatment planning with a multidisciplinary approach led to successful treatment of the diseases.

Objective: The current case study highlights the significance of both endodontic and periodontal therapy for the management of teeth having endo-perio lesion.

Case Report: A 45-year-old male presented with food lodgement with pain on left lower back tooth without any systemic condition. Primary endo and secondary perio lesion was diagnosed using IOPAR. Root canal treatment was followed by open debridement of the defect, insertion of a xenograft, and suturing done during procedures.

Result: Clinical attachment level significantly increased and bone deposition in the furcation area was seen on the radiograph three months after surgery.

Discussion: Root canal treatment with proper disinfection procedure leads to decrease in bacterial infection followed by periodontal surgery helps in the regeneration of bone in the furcal area.

Conclusion: To effectively treat the lesion, collaboration between many specialties such as periodontology, endodontics, and prosthodontics is needed.

Keywords: Endo-Perio Lesion; Multidisciplinary; Periodontal Surgery; Root Canal Treatment; Xenograft

Introduction

Endodontic and periodontal diseases have a variety of pathogenesis and are complex in nature. The diagnosis of the specific condition determines the majority of the treatment, decision-making, and prog-

nosis. In order to execute best prognosis restorative, endodontic, and periodontal therapy should work together [1]. Furcation involvement presents one of the major challenges in endodontic therapy with periodontal involvement [2]. The most commonly used classification was given by Simon, Glick, and Frank in 1972, which includes [3]:

1. Primary endodontic lesion,
2. Primary periodontal lesion,
3. Primary endodontic lesion with secondary periodontal involvement,
4. Primary periodontal lesion with secondary endodontic involvement and
5. True combined lesion.

Various treatment modalities have been proposed for the treatment of furcation involvement including root canal procedure, open flap debridement, bio-modification of root surface and various regenerative procedures including GTR and bone grafts. Bone grafts having a property of osteogenesis, osteoinduction and osteo conduction have been used in the past [4]. Increased bone support for the affected tooth with bone grafting and GTR can also lead to a better prognosis. According to (Parolia, et al. [1]), these regeneration techniques have a reported success rate of 77.5% when treating mixed lesions. On the other hand, without regeneration operations, the success rate ranges from 27% to 37%. The prognosis should also take into account patient-specific, defect-specific, and healing factors at each stage [5].

Case Report

A 45-year-old male patient came to the Dept of Conservative Dentistry and Endodontics, SCB Dental College with a chief complain of food lodgement with pain in his lower left back tooth region since 2 months. No relevant medical/family history was reported. The patient was cooperative and well-oriented. Intra-oral clinical examination revealed disto-occlusal carious lesion wrt #36. Periodontal examination revealed, deep periodontal pocket in relation to distal aspect of 36 with grade 3 furcation, without any mobility (Figure 1). IOPAR revealed proximal caries present in distal aspect of #36 with angular bone loss and radiolucency involving furcation area. The final diagnosis was primary endodontic with secondary periodontal lesion w.r.t. #36 (Figure 2).



Figure 1: Pre-operative view.



Figure 2: Pre-operative radiograph of #36.

Clinical Procedure

A. Root Canal Procedure: Treatment procedure has been explained and informed consent was obtained prior to the treatment. Oral prophylaxis was done before the root canal procedure and recalled after 7 days for further treatment. Tooth [#36] was isolated under rubber dam [Coltene] and access opening was done using Endo Access bur [no. 3, Dentsply, USA]. Initial glidepath was created using #10K Path finder file [Mani, Japan]. Pre-endo buildup was done using Universal bonding agent [Tetric-N-Ceram Universal, Ivoclar, Switzerland], Composite [Tetric-N-Ceram, Ivoclar, Switzerland] and light cured [Bluephase, Ivoclar, Switzerland] 20sec for bonding agents and 40sec for composite restoration, which further decrease the food lodgement (Figure 3). Working length [MB and ML = 19.5mm, DB and DL = 19mm] was determined using radiograph and confirmed using an electronic apex locator [CanalPro Compact, Coltene, Switzerland]. Root canal instrumentation was done upto F2 of ProTaper Gold files [Dentsply, USA]. Canals were irrigated with 3% sodium hypochlorite [NaOCl] [Parcan, Septodont, France], 17% EDTA solution [Neoedta Liquid, Orikam, India] and 0.9% normal saline using 30 Gauge side-vented needle [Neoendo, Orikam, India]. Canals were dried using paper points. Calcium hydroxide paste [RC Cal, Prime, India] was placed inside the canals, temporary restoration done and recalled after 14 days. During second visit, initial irrigation was done using 0.9% Saline and 3% sodium hypochlorite under rubber dam isolation. Radiographs were taken to see the master cone fit. Final irrigation was done using 0.9% saline and 17% EDTA solution. Canals were dried using paper points. Obturation was done with resin-based sealer [Dia Pro-seal, diadent, South Korea] and Guttapercha using single cone obturation technique. Access cavity restoration was done using composite material (Figure 4).

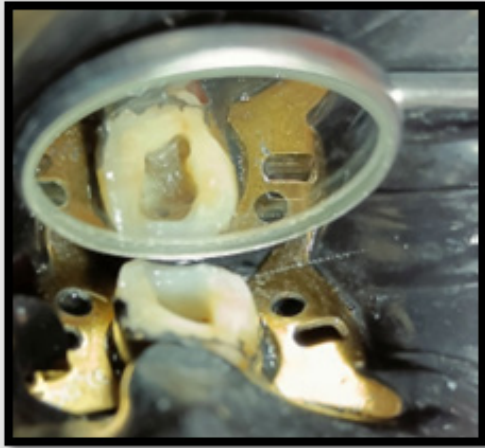


Figure 3: Access opening, Pre-endo buildup and biomechanical preparation under rubber dam isolation wrt #36.



Figure 4: Obturation and coronal restoration after 2 weeks wrt #36.

B. Periodontal Surgical Procedure

Third visit was scheduled 3 weeks after the endodontic procedure. Periodontal surgical procedure was done in Dept of Periodontics and implantology, SCB Dental College and Hospital, Cuttack by Dr Asit Kumar Mishra. Periodontal pocket was reevaluated using periodontal probe on the distal side of #36 measuring more than 5mm. Under local anaesthesia [1:80,000, Xicaine, India], periodontal flap surgery was done. Crevicular incision made from #31 to #38 using 15C BP blade (Figure 5). Mandibular tori were present #34-#33. Re-

duction of bony specule and tori with low-speed handpiece [Straight Handpiece, NSK, Japan] (Figure 6). In the furcal area, a xeno graft [Osseograft DMBM Xenograft, Advanced Biotech, India] was positioned in respect to #36 (Figure 7). Simple interrupted sutures placed using 4-0 Mersilk and Coe-pack placed (Figure 8). After receiving post-operative drugs and instructions, the patient was called back after 7 days for suture removal. After 1 month from the surgery, the patient was recalled for another checkup. The patient had good oral hygiene. When 36 was probed, there was no bleeding. Both the inflammation and the depth of the pocket probing decreased (Figure 9). IOPAR obtained 3 months after surgery revealed deposition of bone in the furcation area (Figure 10).



Figure 5: Crevicular incision from #31 to #38.



Figure 6: Removal of bony specule and tori with slow-speed rotary instruments.

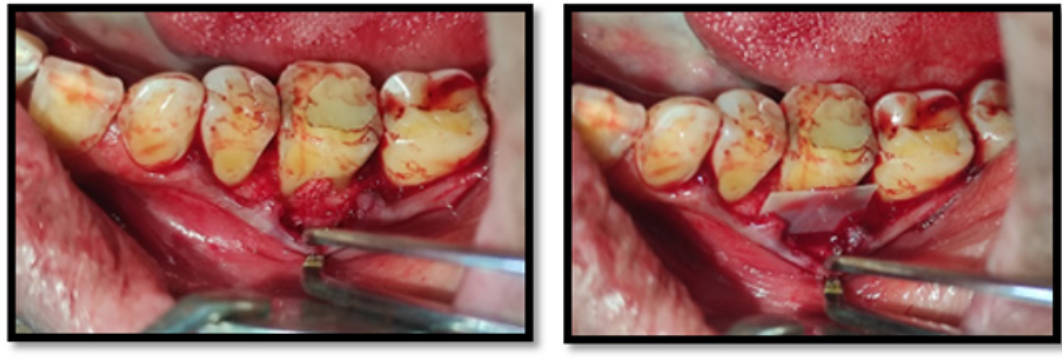


Figure 7: Regenerative surgery and placement of Xenograft wrt #36.



Figure 8: Suturing and Coe-pack placement.



Figure 9: Healing following after 1 month.



Figure 10: IOPA taken after 3 months of surgery showing bone regeneration in furcal area wrt #36.

Discussion

Proper diagnosis and treatment planning is necessary for the teeth with endo-perio lesions. Treating a complex endo-perio lesion is still challenging in modern clinical practice. The diagnosis may be more difficult and the prognosis for the affected teeth may be affected if endo-perio tissue breakdown occurs at the same time [6]. To execute an appropriate treatment plan a good diagnostic strategy should be implemented. It also calls for a detailed grasp of the two complicated tissues involved in the wound healing process. Endodontic treatment and periodontal regeneration therapy are both necessary for the treatment of endo-perio lesions. The initial step of the treatment plan is to focus on cleaning and disinfecting the root canal system, which is followed by a waiting period. The purpose of periodontal surgery is to eliminate any necrotic tissues from the surgical site and to encourage the growth of new hard and soft tissue as well as attachment structures [7]. The present case had a primary endodontic involvement with subsequent periodontal lesion. As a result, periodontal surgery was performed after the endodontic therapy. Since there was a buccal furcation, bone graft was used to regenerate the area. Xenograft, a synthetic graft derived from bovine bone was used as a bone graft. It is a mixture of an organic bovine derived hydroxyapatite matrix with a synthetic cell-binding peptide [8]. The Results at 3 months have revealed adequate amount of bone deposition in the furcation area treated tooth [9]. Similar type of study done by Hacer Aksel and published in 2014. After receiving endodontic care, periodontal surgery the patient's symptoms had disappeared, and clinical and radiological results had improved [10].

Conclusion

The pathophysiology of an endo perio lesion is complex, making diagnosis and treatment extremely difficult. Therefore, to effectively treat the lesion, collaboration between many specialties such as peri-

odontology, endodontics, and prosthodontics is needed. As demonstrated in this case report, a better treatment strategy yields better results.

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