



International Journal of Applied Dental Sciences

ISSN Print: 2394-7489
ISSN Online: 2394-7497
IJADS 2017; 3(3): 113-116
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www.oraljournal.com
Received: 25-05-2017
Accepted: 26-06-2017

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Endo-perio lesion: A case report

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Abstract

An Endo perio lesion has been one of the most common problems associated with the tooth. The simultaneous involvement of pulpal problems and inflammatory periodontal disease can complicate diagnosis and treatment planning. The present case report shows the importance of periodontal therapy that includes open debridement of the defect followed by placement of alloplastic bone graft (G-bone) in furcation defect created by endodontic lesion. The tooth was first endodontically treated that was followed by periodontal treatment. 6months post operatively there was significant gain in clinical attachment level. Radiographically there was a significant amount of bone fill observed.

Keywords: endo-perio lesion, furcation defect, furcal bone loss, endodontic failure

Introduction

Periodontic-endodontic lesions are complex in nature and have varied pathogenesis. Treatment, decision making and prognosis depends primarily on the diagnosis of the specific disease. To have the best prognosis, clinician must refer the case to various areas of specialization, to perform restorative, endodontic and periodontal therapy either singly or in combination^[1].

Classification

The most commonly used classification was given by Simon, Glick and Frank in 1972, which includes^[2]:

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

Prognosis of Teeth with Endo-Perio Lesions

Primary endodontic lesions

Healing of primary endodontic lesions usually take place after root canal therapy. Presence of microorganisms in the root canal influences the outcome of therapy^[4], with a proper focus on control of infection, a good prognosis is expected with the treatment^[1].

Primary periodontal lesions

Such lesions can solely be treated by periodontal therapy. Prognosis of primary periodontal lesions depends on^[1]:

- The severity of the periodontal disease
- Efficacy of periodontal therapy
- Response of the patient.

However, prognosis of primary periodontal lesions is not as favorable as primary endodontic lesions.

Vigorous removal of cementum and exposure of dentinal tubules during periodontal surgery may deteriorate the outcome, by causing pulpal inflammation and necrosis of the dental pulp.

Avoiding the use of irritating chemicals, minimizing the use of ultrasonics and rotary scaling instruments may aid in the good outcome of the disease [1].

Primary endodontic with secondary periodontal lesions

The prognosis of such lesions depends principally on the severity of periodontal involvement. If the endodontic treatment is adequate, the prognosis depends on the severity of the marginal periodontal damage and the efficacy of periodontal treatment [4].

The outcome of these lesions caused due to iatrogenic damage such as root perforations depends on the size, location, time of diagnosis and treatment, degree of periodontal damage as well as the sealing ability and biocompatibility of the sealer [1].

Primary periodontal secondary endodontic lesion and true combined lesions

Efficacy of periodontal therapy usually determines the prognosis of combined lesions. A poor or even hopeless prognosis is expected in such cases, especially in patients with chronic and extensive periodontal diseases.

A part of the root or tooth structure can be saved through hemi section or bicuspidization, root amputation. However, various factors such as tooth anatomy, function, restorability, root filling, bone support and patient’s compliance should be considered before root resection by the operator [1].

An improved prognosis can also be achieved by increasing the bone support of the affected tooth by the means of bone grafting and GTR. These regenerative procedures have reported to have a success rate 77.5% in the treatment of combined lesions (Parolia *et al.* 2013) [1]. On the contrary, the success rate ranges from 27% to 37% without regenerative procedures. Besides, patient-specific, defect-specific, and healing factors should also be considered at each level while determining the prognosis [9].

Primary Endodontic With Secondary Periodontal Lesion Case Report

A 35 year old male patient came to the dental clinic with a chief complain of pain in his lower left back tooth region since 1 month. Patient was systemically healthy. He gave the history of Root canal treatment 3 year back in 36.

Intra-oral clinical examination:

- Visual: amalgam restoration w.r.t 36. Supragingival calculus and inflammation of marginal gingiva w.r.t 36.
- Periodontal finding: Deep periodontal pocket in relation to distolingual aspect of 36 with grade 3 furcation involvement.
- Mobility: no mobility present.

Investigations

IOPA: IOPA of 36 revealed radiopacity in the occlusal surface, extending into the pulp chamber of mesial and distal roots 2mm short of the apex, suggestive of incomplete endodontic treatment. Radiolucency involving the apical area of the distal and mesial root along with radiolucency in furcation area was present.

Diagnosis

Primary endodontic with secondary periodontal lesion w.r.t. 36. (According to classification proposed by Simon *et al.*, 1972)

Decision making and treatment plan

Decision making

Involvement should first be treated with endodontic therapy

(Rotstein *et al.*, 2002) [3], along with first phase one (hygiene phase) of periodontal therapy. After the evaluation of treatment results in 2-3 months, further periodontal therapy should be considered (Parolia *et al.*, 2013) [1].

Treatment Plan

- Phase I: Scaling and root planing; Oral hygiene instructions.
- Evaluation after Phase 1: Recall the patient after 1 week.
- Phase II: Biomechanical preparation and obturation w.r.t 36.

Open flap debridement with attempted regeneration for bone loss in furcation area.

- Phase III: crown w.r.t 36
- Phase IV: Recall appointments to be scheduled based on Merin’s classification.

In the present case report, endodontic treatment w.r.t 36 appeared incompletely obturated and was performed 3 year back. IOPA revealed incomplete resolution of the peri-apical infection and bone loss in furcation area (Fig: 2). So, periodontal therapy was planned. Phase 1 therapy was instituted. Patient was recalled after 1 week for re-evaluation and reinforcement of oral hygiene. Endodontic therapy was redone for 36 and completely obturated. After 3 weeks, periodontal pocket was reassessed. Deep periodontal pocket of more than 5mm was present in relation to 36 on the distolingual aspect. Periodontal flap surgery was planned in relation to 36 under local anesthesia. A full thickness mucoperiosteal flap was raised w.r.t 35, 36 and 37 (fig: 3). the area was thoroughly debrided using hand curettes and ultrasonic scalers. G-Bone alloplastic graft was placed in relation to 36 in furcal area (fig: 4). Simple interrupted braided black silk sutures were placed (fig: 5) and periodontal dressing was applied (fig: 6) over the area. Post-operative medications and instructions were given and patient was recalled after 7 days.



Fig 1: Pre-operative view



Fig 2: Pre op IOPA showing gutta percha being traced into the furcation defect.



Fig 3: Deep furcal defect



Fig 4: G-Bone graft



Fig 5: Sutures



Fig 6: Periodontal pack

Evaluation

The patient was recalled after one month of flap surgery for re-evaluation. A good oral hygiene of the patient was observed. There was absence of bleeding on probing w.r.t 36. Resolution of the inflammation and a reduction in probing pocket depth was observed (fig: 7). IOPAR taken 6month postoperative showed complete bone fill in the furcation area (fig: 8).



Fig 7: 1 month post-operative



Fig 8: 6 month post-operative IOPAR

Discussion

The diagnosis and prognosis of the tooth having endo-perio lesions presents a challenge to the clinicians. Correct diagnosis is important to determine the treatment and long-term prognosis. However, treating a complex endodontic-periodontal lesion is still one of the most common challenges in today's clinical practice. The simultaneous existence of endodontium and periodontium tissue destruction can complicate the diagnosis and subsequently affect the prognosis of the involved teeth [6]. This highlights the importance of following a critical diagnostic strategy to ensure a correct treatment plan. It also requires thorough understanding of wound healing process involving both complex tissues.

Treatment of endo-perio lesion requires both endodontic treatment and periodontal regenerative treatment. The treatment strategy is to first focus on debridement and disinfection of the root canal system followed by an observation period. The goal of periodontal surgery is to remove all necrotic tissues from the surgical site and facilitate the regeneration of hard and soft tissue along with the formation of new attachment apparatus [7].

In the reported case the established diagnosis was of primary endodontic with secondary periodontal involvement. Hence; endodontic therapy was redone and followed by periodontal surgery. Since buccal furcation was involved, an attempted regeneration was done with the help of bone graft. Bone graft used was G-Bone that consists of synthetic Calcium Hydroxyapatite in low crystalline form. It is a mixture of Hydroxyapatite, β -tricalcium phosphate and other forms of calcium such as calcium carbonate and bi calcium phosphate. Both are biologically compatible and have been used in the treatment of periodontal osseous defects. Studies have shown that HA particles did not elicit an inflammatory response and that they provided a scaffold for the new bone to grow. The

results post 6 month has shown a significant amount of bone fill in the furcation area of the treated tooth [8].

Similarly; in a case series published by Hacer Aksel in 2014, one case with primary endodontic and secondary periodontal lesions was reported. Endodontic treatment was administered followed by periodontal surgery after 3 months. One year follow up of the patient revealed resolution of the symptoms and improved clinical and radiographic findings [5].

Conclusion

Endo perio lesion has a complex pathogenesis and requires great skill to identify and treat it. Hence; Cooperation between different disciplines that includes periodontology, endodontic and prosthodontics is required to effectively treat the lesion. A better treatment plan leads to a better result as seen in this case report.

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