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Treatment of Endo-Perio Lesion: in Patient with Chronic Periodontitis

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Abstract
Endo-perio lesions has one of the, most common challenges associated with dental field. Endodontic-periodontal combined lesions are a clinical dilemma because complicated diagnosis and treatment planning. (Mandel et al,. 1993) Simiring and Goldberg described the relationship between pulpal and periodontal disease in 1964. The main cause for pulpal and periodontal disease is bacterial. Through cross-infection between the root canal and periodontal tissue may be occurs by several pathways as apical foramen, lateral and accessoring canals, dentinal tubules, palatogrooves, iatrogenic root canal perforation and root fracture horizontally and/or vertically, (Zehnders et al. 2002).
Regarding the failure or success of treatment for perio-endo lesions are depending to several factors as pulp vitality, type and extent of the periodontal defects.
The aim of the present study is to diagnosis and to manage the endo-perio lesions.

Case Report

Examination

A female patient, 26 years old complained of pain in ≠46 from 2 weeks ago. Patient was free from any systemic disease. On intra oral examination, there was a deep carious lesion related to ≠ 46 with previous pulpectomized from 2 months ago. There is a tenderness after applied percussion test as well non-response selected tooth with vital cold test.

From periodontal view, there was deep periodontal pocket equa 89mml bucally as shown in figure (1)

Figure 1: probing on buccal aspect

On radiographic examination for ≠46 showed radiolucency related to mesial and distal roots for ≠ 46 which extruding along the lateral surface of root leading to vertical bone less around mesial root. Surface of ≠46 figure (2).

Figure 2: pre-op radiograph

Treatment Planning

Emergency phase started by initially endodontic therapy was preformed as shown in (figure 3 & 4) (Rotstein, 2002).

Figure 3 : Endodontic treatment

Figure 4 : Endodontic treatment

Phase one therapy was done through scaling and root planning followed by evaluation after 23 months, were applied for bone regenerate. To start periodontal surgery, bio-oss bone graft and biomedical extend / collagen membrane. After taking care of asepsis and sterilization, the surgery was planned. The selected area for surgery (≠46) was anathetized with xylocaine with 1:100000 20mg/ml + 12.5mg/ml, through intrasulcular incision and reflection the flap buccally and lingually with full thickness flap (figure 4). The vertical bone loss around mesial root surface of ≠46 with length 8mm was appeared as 3 osseous defect wall that confirmed with radiographic measurement (figure 6).

Figure 5: full thickness flap

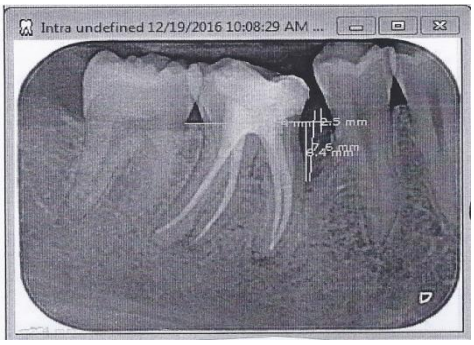

Figure 6: measurement of mesial pocket

Degranulation and debridement was done of perio-pocket by using Gracey's Currette ≠9 and ≠10 for facial surface while ≠11 and ≠12 for mesial surface followed by irrigation with chlorhexidine gluconate and applied tetracycline past for 5-7 minutes to control bleeding and exposed of dentinal tubules as shown figure (7). This past act as root bio modification regeneration method to enhance periodontal regeneration. Bone graft material was applied (Bio-oss) to the area of bone loss defect by using bone graft carrier and placed in increment with proper condensation as shown clinically and radio graphically figure (8).

Figure 7: Tetracycline application

Figure 8: Bone graft applied

To protect bone graft material and to avoid epithelial migration we can use resorbable collegen membrance (Bio mend extend) that suturing by 5/0 vicryle suture to stabilize the graft as shown for (9 & 10).

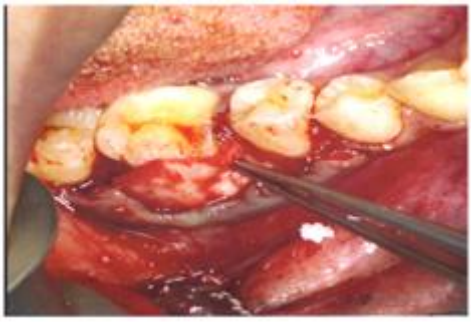

Figure 9: Collegen membrance applied

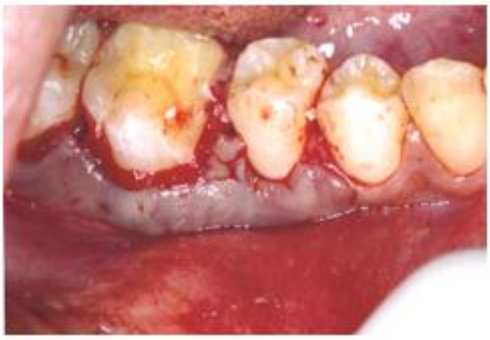

Figure 10: Coronal repositioning flap

The flap was repositioning as a cronal repostiong flap with suturing with horizontal matrices by 3/0 vicryle as shown in figure (11) .

Figure 11 : Suturing 3/0 vicryle

Figure 12: Post-operative after 8 months

Post operative medications and post surgical instructions were given to the patient who recalled every 3 months for clinical and radiographic evlausion to detect the level of probing depth and attachment loss as shown in figure (12, 13, 14,15)

Figure 13: Post-operative after 3 months

Figure 14: Post-operative after 6 months

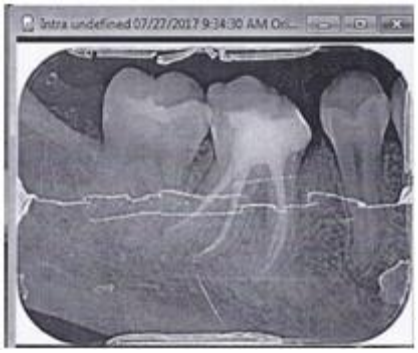

Figure 15 : Post-operative after 9 months

Discussion

Tissues of dental pulp and periodontium are inter-linked from the embryonic stage. The dental papilla and dental sac are common mesodermal orgin. Effect of periodontal disease (Stelzer et al. 1963) on pulp was described firstly in 1918 by Turner et al. They suggested that supporative perodontitis, induce changes in the pulp such as fibrosis, clasification. On the other hand, pulp communicates with periodontal ligament via the apical foramen, auxillary, furcation canals and dentinal tubules. The manifestation of periodontal involvement as a sequllae of a pulp is thickening of periodontal ligament space, resorption of adjacent alveolar bone, formation of granuloma or cyst and furcation involvement. (Perlmutter et al., 1987).

Diagnosis and clicical examination for endo-perio lesions is one of common challenge in dental field due to different causes and inter-relationship between causes. So, proper diagnosis is an important factor to detect the treatment and good prognosis for a long time. Several studied was done to detect the effect of endodontic treatment of periodontal wound healing, the result was negative (Zehndar et al. 2002) while other researchers found non-significant effects maybe produced (Perlumtters et. al. & de Miranda et al. 2003).

Endodontic treatment is highly predictable with higher rate of success while periodontal lesion cannot easily predicted as endodontic lesions. On the other hand effective endodontic treatment may eradicate periodontal pocket (Pand. F, et al 1997). In our case, after using vitality test which showed no response for non-vital tooth that suggesting ≠46 is primary endodontic involvement.

Treatment of endo-perio lesion requires both endodontic treatment and periodontal regenerative treatment. The treatment strategy is to first focus on debridement and disinfect 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 attachement apparatus. In the reported case the established diagnosis was of primary endodontic with secondary periodontal involvement. Hence; endodontic therapy was done 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 Bio-oss consists of synthetic calcium hydroxyapattite in low crystalline form. It is a mixture of hydroxyapatite, β-ticalcium 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 new bone to grow. The results post 3,6,9 months has shown a significant amount of bone fill in the defect area of the treated tooth. Similarly; in a case series publishbed 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.

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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