A RATIONAL APPROACH FOR THE MANAGEMENT OF CLINICIAN'S DILEMMA CALLED ENDO-PERIO LESION

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Abstract

The pulp and periodontium have embryonic, anatomic and functional inter-relationship. The co-existence of pulpal and periodontal disease can complicate diagnosis and treatment planning. Knowledge of these disease processes is essential for arriving at correct diagnosis. This is achievable by careful history taking, examination and the use of special tests. The prognosis and treatment of each endodontic-periodontal disease type varies. Combined endodontics-periodontal diseases require both endodontic and periodontal therapies. The prognosis of these cases depends on the severity of periodontal disease and the response to periodontal treatment. This case report describes a stepwise approach for the management of endo-perio lesion employing endodontic treatment and regenerative periodontal treatment.

Key words: Endo-Perio Lesion, Peiodontium, Pulp, Regenerative Procedure..

Introduction

The relationship between the periodontium and the pulp was first discovered by Simring and Goldberg in 1964.[1] The tooth, the pulp tissue within it and its supporting structures should be viewed as one biologic unit. The interrelationship of these structures influences each other during health, function and disease. Ectomesenchymal cells proliferate to form the dental papilla and follicle, which are the precursors of the pulp and the periodontium respectively. This embryonic development gives rise to anatomical connections, which remain throughout life. Three main pathways have been implicated in the development of periodontal-endodontic lesions, namely dentinal tubules, lateral and accessory canals, and apical foramen.

It has been suggested that periodontal disease has no effect on the pulp before it involves the apex.[2] On the other hand, several studies suggested that the effect of periodontal disease on the pulp is degenerative in nature including an increase in calcifications, fibrosis, and collagen resorption, in addition to the direct inflammatory sequelae.[3,4]

Similarly pulpal disease affects periodontium also. Jansson *et al.*[5] assessed the effect of endodontic pathogens on marginal periodontal wound healing of denuded dentinal surfaces surrounded by healthy periodontal ligament. Their results showed that in infected teeth, the defects were covered by 20% more epithelium while the noninfected teeth showed only 10% more connective tissue coverage. They concluded that pathogens in necrotic root canals may stimulate epithelial downgrowth along denuded dentin surfaces with marginal communication and thus augment periodontal disease.

Correct diagnosis holds the key to successful management in these cases. This case report describes the successful management of an endo-perio lesion. Endodontic treatment has a more predictable outcome but the prognosis in these cases is dependent on periodontal therapy and its maintenance phase.

Case report

A 22-year-old patient reported to the out patient department with a complaint of pain in the lower front teeth region associated with pus discharge since 3 months. On intraoral examination, an intraoral sinus was found to be present in relation with 31 [Figure 1].

Figure 1: - a) Pre operative photograph showing sinus tract present i.r.t. tooth #31
b) Pre operative IOPA radiograph showing large radiolucency in mandibular anterior region

An intraoral periapical radiograph showed a large radiolucency in relation with 31, 41. The probing depth were found to be 5 mm distal and mesial to 31. Teeth 31 and 41 had grade II mobility. Calculus deposits were found on the lingual surface of lower anterior teeth. Electric and thermal pulp testing was done for teeth 31, 32, 41, and 42. It confirmed that the teeth 31,41 were nonvital.

Treatment planning was done taking into consideration that the tooth was nonvital with a prevailing sinus tract and grade II mobility in teeth 31,41. Endodontic treatment was done first. Under rubber dam isolation, access opening was done in teeth 31,41. Pus discharge from these teeth was noted on opening the root canals. After working length determination and proper cleaning and shaping of the canals, the canals were filled with calcium hydroxide medicament (Metapex) for 3 weeks. Intentional extrusion of Metapex was done periapically to promote periapical healing. After 3 weeks, teeth were re-accessed and no discharge was found from the canals. Canals could be dried and were obturated. Scaling was done for removal of local irritating factors. The patient was followed up for 3 months. After 3 months, IOPA showed that some metapex was still present periapically and fine bony trabeculae formation between 31 and 41 could be seen [Figure 2]. Mobility of teeth was still present and there was still a 4mm pocket

around 31. Therefore, periodontal regenerative surgery was planned.

Figure 2: - IOPA after 3 months of obturation of teeth #31,41.

After taking care of asepsis and sterilization the surgery was planned. The area selected for surgery was anesthetized using xylocaine with adrenaline 1:80,000. A full thickness flap was raised at the facial aspect following intracrevicular incision and vertical releasing incisions. After reflection thorough degranulation and debridement was done at the defect area. Also thorough scaling and root planning was carried out on the exposed root surface area of the defect. Placement of HA - βTCP (60:40) bone graft and resorbable collagen barrier membrane was done. Primary closure of the flap was done with nonresorbable black silk (3–0) suture using interrupted suturing technique [Figure 3].

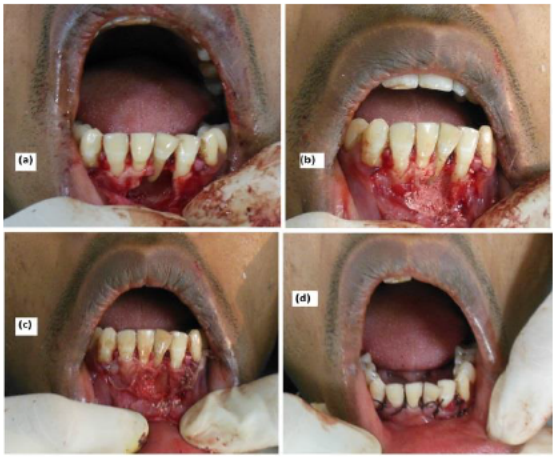

Figure 3: - Regenerative periodontal surgical procedure showing (a) defect after removal of granulation tissue (b) graft placement (c) collagen membrane placement (d) primary closure of tissues.

The patient was advised proper plaque control, and was prescribed 0.12% chlorhexidine mouthwash for rinsing twice daily. The sutures were removed 7 days after surgery. The patient was put on regular recall at 1, 3, and 6 months. After 6 months of regenerative procedure, new bone formation could be seen around 31 and 41 in periapical radiographs, mobility of teeth was normal and the periodontal probing gave normal results. [Figure 4]

Figure 4: - (a) 6 month recall IOPA radiograph showing healing of radiolucency (b) Healed sinus tract.

Discussion

Correct diagnosis is the most important step in the management of an endo-perio lesion. Primary endodontic disease with secondary periodontal involvement, primary periodontal disease with secondary endodontic involvement, or true combined diseases are clinically and radiographically very similar. When the etiology is purely endodontic, calcium hydroxide can be used as an intracanal medicament. It is an excellent medicament because it is bactericidal, anti-inflammatory and proteolytic; it inhibits resorption; and it favors repair.[6] It is especially effective in endodontic lesions with extensive periapical pathology and pseudo pockets, because of its temporary obturating action which would inhibit periodontal contamination of the instrumented canals via patent channels of communication. This regimen usually will resolve the pseudo pocket within a few weeks.[6] Treatment results should be evaluated after two to three months and only then should periodontal treatment be considered. This allows sufficient time for initial tissue healing and better assessment of the periodontal condition. Prognosis of primary endodontic disease with secondary periodontal involvement depends on periodontal treatment and patient response. However, lesions which are not true combined lesions, little or no improvement would be seen with the periodontal perspective after endodontic treatment. But with the advent of new regenerative materials, successful periodontal treatment of such lesions has been possible.

In this report the pulp vitality test which showed the nonvital nature of the teeth suggested endodontic involvement. And the periodontal pockets and mobility of teeth showed their periodontal involvement. Generally, in a case of combined endo-perio lesion, an adequate endodontic therapy would result in healing of the endodontic component, and the prognosis would finally depend on the efficacy of periodontal repair/regeneration initiated by either of the treatment procedures. In this case, following endodontic treatment the periodontal lesion did reduce to an extent on radiographic evaluation after 3 months but did not subside completely with little change in the clinical parameters. This confirmed a secondary

periodontal involvement along with primary endodontic component.

It has been demonstrated that intrapulpal infection tends to promote epithelial downgrowth along a denuded dentin surface.[5] Therefore, it is essential that pulpal infections be treated first, before undertaking periodontal regenerative procedures.

The success rate of the endo-perio combined lesion without a concomitant regenerative procedure has been reported to range from 27% to 37%.[7] This result demonstrates the notably low success rate and explains why regenerative periodontal surgery should be performed following endodontic treatment in combined endo-perio lesions. Proper diagnosis and adoption of the bone graft technique or the guided tissue regeneration technique combined with osseous grafting followed by the removal of etiological factors will ensure complete restoration of the health and function to a tooth with severe attachment loss resulting from a combined endo-perio lesion.[8]

Britain *et al*.[9] also showed that management of induced endo-perio lesions by bioabsorbable collagen membranes alone or in combination with anorganic bovine bone matrix resulted in enhanced amounts of bone and periodontal ligament and significant increases in the amount of new cementum when compared to open flap debridement alone.

A perio-endo lesion can have a varied pathogenesis which ranges from quite simple to relatively complex one. Endodontic-periodontal lesions present challenges to the clinician as far as diagnosis and prognosis of the involved teeth are concerned. It is of utmost importance that the patient maintains good oral hygiene and obtains regular professional care for this region.

Conclusion

Treatment and prognosis of primarily endodontic and primarily periodontal disease is very straightforward. However, prognosis of combined forms of the lesions is more difficult to predict. Endodontic therapy is more predictable and completion of this therapy before periodontal procedures has a positive effect on periodontal healing. In general, assuming that endodontic therapy is adequate, what is of endodontic origin will heal. However, in cases of combined disease, the prognosis of combined diseases rests with the severity and extent of the periodontal lesion and the efficacy of periodontal therapy. In conclusion, it is essential to understand that in perio-endo lesions, the endodontic treatment is the more predictable of the two. However the success of endodontic therapy is dependent on the completion of periodontal therapy. The complete treatment of both aspects of perio-endo lesions is essential for successful long-term results.

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