CASE REPORT

MANAGEMENT OF SOME PERIODONTIC - ENDODONTIC LESIONS: A CASE SERIES

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ABSTRACT

Perio-endo lesions are one of the most controversial lesions in aspects of diagnosis and treatment planning. The pathological picture of these lesions varies from quite simple to relatively complex one. It is based on the knowledge and skill of the clinician to make proper diagnosis and work on the long-term good prognosis of these lesions. In this case series treatment planning for some of the common perio-endo lesions are shown along with the follow up radiographs.

Keywords: *Perio endo lesion, bone regeneration, fracture, furcation involvement.*

INTRODUCTION

Pulpal and periodontal tissues are inter-related embryonically. Knowledge of these lesions is very much necessary for correct diagnosis and treatment planning. This is achieved by proper history taking, radiographic and clinical examination. In 1964, Simring and Goldberg first described the relationship between periodontal and pulpal tissues.[1] The differential diagnosis of endo-perio lesions sometimes becomes difficult, but it is of vital importance to make correct diagnosis, so that appropriate treatment can be provided, alongwith long term success.

In 1972, Simon et al. gave a classification for easy understanding of endodontic and periodontic lesions, which is as follows:

a. Primary endodontic lesions: pulp is infected and non-vital.

b. Primary periodontal lesions: pulp is vital and responsive to testing

c. Primary endodontic lesions with secondary periodontal involvement: endodontic lesion leading to periapical and periodontal involvement. Pulp is non vital.

d. Primary periodontal lesions with secondary endodontic involvement: periodontal cause leading to periapical and pulp involvement. Pulp may be vital or non vital.

e. True combined lesions: less frequent. Clinical picture resembles that of a fractured tooth.

The pulpal and periodontal tisues are anatomically, embryonically and functionally interrelated. Main pathways interconnecting pulp and periodontium are:[2]

1. Anatomical pathways which are: apical foramina, accessory canals and dentinal tubules
2. Non physiological pathways which are: iatrogenic perforations, including instrument perforations during root canal access, perforations during post placement or due to improper manipulation of other instruments and vertical root fractures.

DIAGNOSIS

For proper diagnosis and prognosis of these lesions, the following have to be properly recorded:[3]

1. Proper history taking for pain, trauma, and past disease.
2. Clinical Examination: for abnormalities such as caries, defective restorations, erosions, abrasions, cracks, fractures, and discolorations, visual examination of the site for sinus tract, ulcerations, fracture, inflammation.
3. Pain on vertical and horizontal percussion indicates periapical and periodontal lesions respectively.
4. Mobility.
5. Radiographic examination for periapical and periodontal abscess, root resorption, widened lamina dura and vertical root fracture.
6. Pulp Testing: The vitality of pulp tissue can be determined with certainity in single rooted tooth or in tooth with single canals. But, the same degree of confidence cannot be ascribed to tooth with multiple canals.
7. Periodontal probing to check for pocket depth and thus, predict the relative periodontal tissue destruction.

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MANAGEMENT

Factors to be considered before starting treatment of perio-endo lesion are, whether there is a functional need for the tooth, whether the tooth is restorable after the lesion has been treated and whether the patient is ready for a lengthy, costly and invasive treatment. If any of these factors are not met, then extraction is the preferred choice of treatment.

In primary endodontic lesions pulp therapy will be sufficient and patient should be kept on follow up. However, in case of secondary periodontal involvement scaling and root planing alongwith endodontic therapy should be commenced first. Patient should be kept on follow up for 2-3 months to examine the healing of periapical and periodontal lesion, and after that only periodontal therapy initiated.[4]

Primary periodontal lesions should be treated by scaling and root planning followed by periodontal procedures like flap surgery, bone regeneration with graft and membrane, hemisection and root resection procedures. Need of endodontic therapy depends on vitality of tooth as well as on the periodontal treatment that is to be carried out, like in root resection procedures endodontic treatment is mandatory.[4]

Treatment and prognosis of primary periodontal and endodontic lesions is simple and easier. But the prognosis and treatment planning of combined endo-perio lesions is difficult to predict. The most guarded prognosis is given for true combined lesions.[3] In combined lesions outcome of endodontic therapy is quite predictable and often results in good outcome. But the prognosis of periodontal treatment depends on amount of bone loss and periodontal loss, patient compliance and clinical skills of the dentist. Thus, it can be said that although the prognosis of endodontic treatment is predictable, but the final outcome of combined lesions depend on how well the periodontal lesion has been treated. For successful long term results complete treatment of both aspects of perio-endo lesions is essential.

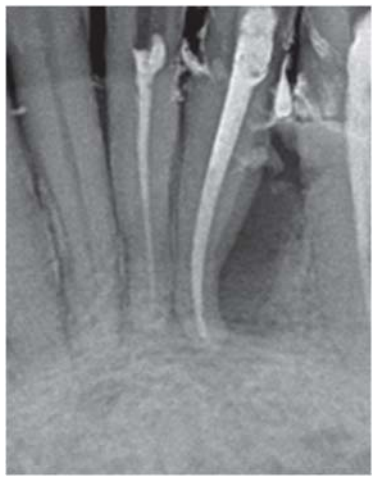
CASE SERIES

1. This case report shows treatment of a combined perio endo lesion with bone regeneration techniques. Indications for bone regeneration procedures are grade 2 and grade 3 root furcation involvement, vertical bone loss (2 walled, 3 walled defects), deep periodontal pocket present. Contraindications include patients with horizontal bone loss, uncontrolled diabetes, grade 3 mobility, uncooperative patients.

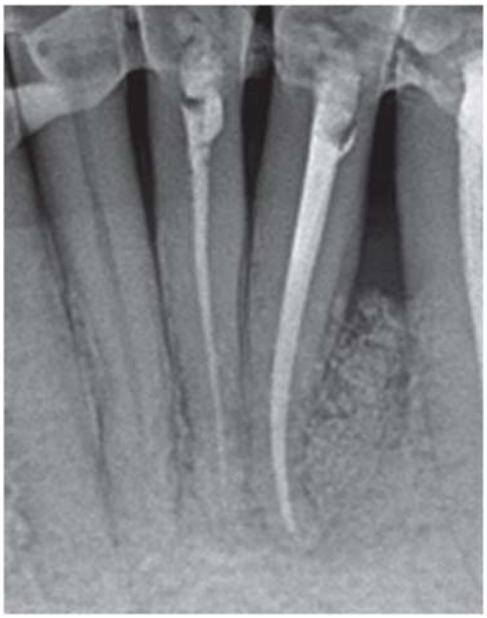
   A 42 year old male patient came to our clinic with the complain of (c/o) gum recession and mobility in lower front teeth region. On examination the patient's gingival condition was not good. Lower 31 and 32 were grade 2 mobile. Radiograph of lower anteriors showed rct treated 31,32 and 33. Vertical bone loss and periapical abscess were seen in relation to (i.r.t.) 32. Full moth scaling and root planing was planned. Full mouth curettage was done. After 2 weeks of follow up the gingival condition improved. Re-RCT of 32 was done. After 1.5 months open flap debridement (OFD) was done i.r.t. lower anteriors. Bio-Oss bone graft and Bio Guide membrane was placed i.r.t. 32. Oral hygiene instructions were given. Sutures were removed after 10 days. Patient was kept on follow up.

   Follow up after 1 month of Re-RCT showed periapical healing and bone formation noticed in that region. However, periodontal lesion was still evident till this time. Follow up after 4 months showed decreased tooth mobility and reduction in periodontal pocket depth i.r.t. 32. Bone formation was noticed upto middle third of the root in radiograph.

Deep periodontal pocket with vertical bone loss



1 month after re-RCT (periapical healing seen)

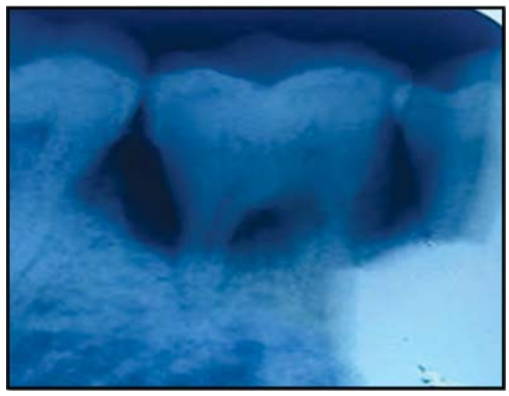


4 months after bone grafting

2. This was a case of bone regeneration in primary periodontal lesion with vital pulp tissue. A young male patient aged 32 years came with the c/o mobility and mild pain i.r.t 46. On clinical examination grade 2 mobility was present. Periodontal pocket depth was 9 mm. Pain on horizontal percussion was present. On radiographic examination grade 2 furcation involvement seen alongwith vertical bone loss. No periapical radiolucency was present. Pulp was vital on checking with electric pulp vitality tester. Therefore, no RCT was performed. Scaling and Root Planing (SRP) was performed. Open flap debridement along with bonegraft (perioglass) and membrane (periocol) was done. Patient was kept on regular follow ups for checking oral hygiene compliance. Follow up after 6 months showed decreased tooth mobility, reduction in pocket depth to 5 mm and bone formation was noticed in furcation area.

Pre- operative probing depth

Probing depth after 6 months



Pre- operative X-ray

Post-operative X-ray after 6

3. This was a case of hemisection or bicuspidization. In such cases, root resection and hemisection procedures are carried out to eliminate inter radicular defects and create access these areas.[5] Indications for root resection procedures are: vertical root fracture and furcation involvement by caries leading to perforation. For resection procedures adequate bone support should be present around the tooth. Resection procedures are contraindicated if there is insufficient space for prosthesis placement, fused roots are present and the tissue architecture is

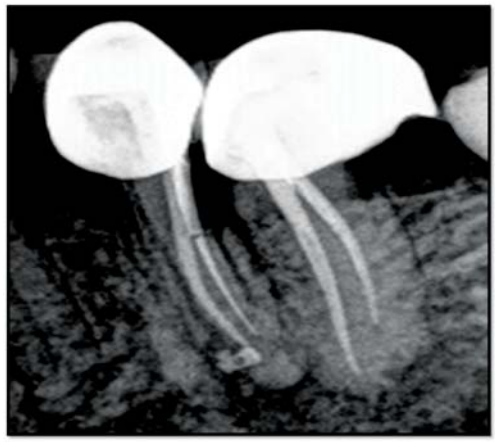
unfavourable. A middle aged, systemically healthy female patient came with c/o pain on biting in the lower left back tooth region. Pain was relieved on releasing pressure. A crack was observed i.r.t. 36 on clinical examination. The crack was through and through in the labio lingual direction upto furcation area. Patient was adamant on saving the tooth and was not willing for extraction. Thus, bicuspidization was planned and different crowns were given on two separated roots after root canal.

Fracture of 36

Pre-operative radiograph

Hemisected mesial and distal

Post operative clinical picture after crown placement



Post-operative radiograph

DISCUSSION

Endo-perio lesions are complex inflammatory lesions to identify and treat. Even after proper treatment protocols are followed, the prognosis of such lesions is unpredictable. It requires a multi disciplinary approach to treat these lesions.

In the first case report, the tooth was RCT treated but the periodontal component was not taken care during initial treatment. This led to the failure of RCT and thus patient's complain was not resolved. When he visited us a new treatment plan was made. Thorough SRP followedby Re-RCT was done. After the periapical lesion healed, open flap debridement along with bone grafting with Bio-Oss xenograft, which is an octeoconductive graft material, and perioguide resorbable membrane for guided tissue regeneration were performed. Grafting procudures are most successful when both buccal and lingual walls are present around the tooth. In this case, buccal wall was created with resorbable membrane to support xenograft. After 4 months, dense bone could be

seen around the root in radiograph.[6] Douthitt (1996), reported that teeth treated by membrane and bone graft reveal better tissue regeneration.[7]

In the second case report, grade 2 furcation was seen. The soft tissue was intact and the Naber's probe did not pass through and through. The pulp was vital, thus this was a primary periodontal defect requiring no endodontic treatment. Here Perioglass which is a bio-active bone graft material and Periocol bio-resorbable membrane were used. The graft acts as a scaffold on which the bone grows and results in hard tissue healing. The membrane prevents the migration of epithelium into the grafted site and thus, prevents formation of long junctional epithelium and promotes healing.[8-10]

The third case report is of a vertical tooth fracture treated by bicuspidization, a treatment which can be used to manage combined endo-perio defect. This case report represents the treatment of a true combined lesion. Bicuspidization can be used to treat grade 3 furcation involvement, perforation by caries or iatrogenic causes. Bicuspidization removes the defect, helps the patient to maintain cleanliness in that area and prevents loss of tooth. Park (2009)[11] suggested that hemisection procedures can prevent long term bone loss around the tooth if patient follows good oral hygiene protocols and follow ups. According to Sadd et al. (2009) hemisection is a good treatment option when one portion of the tooth is decayed and there is sufficient bone to support the remaining part of the tooth, which can act as abutment as well.[12]

In this case series different treatments were done for managing various types of perio-endo lesions. Immediate and correct management of perio-endo lesions can prevent extraction of tooth and even more complex procedures.

CONCLUSION

The successful treatment outcome of a perio-endo lesion depends on the skill and knowledge of the clinician. In addition to conventional treatment procedures, other therapeutic modalities using regenerative procedures, root resection, and hemisection should be considered as per clinical situation for a favourable long-time prognosis. To achieve the best outcome a multidisciplinary approach should be followed.

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