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MANAGEMENT OF ENDO-PERIO LESION DUE TO LONG STANDING TRAUMA FROM OCCLUSION

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ABSTRACT

Endodontic periodontal combined lesion is a dilemma for the clinicians because accurate clinical diagnosis and evaluation of prognosis are often difficult to achieve. The treatment of true combined endodontic periodontal lesions require both a multidisciplinary approach with endodontic therapy and periodontal regenerative procedures. In this case report, a combined lesion due to traumatic occlusion was first treated with conventional root canal therapy and then followed by periodontal therapy. At a three monthpost operative evaluation there was reduction in pocket depth. Radiographic examination revealed evidence of regeneration of the bone.

KEYWORDS: Endodontic peiodontal lesion, Periodontal regenerative procedures, Root canal treatment.

INTRODUCTION

The main objective of a dentist is to retain the natural dentition of the patient. In Periodontology, the main goal is not only to preserve the natural dentition but also to restore the lost periodontium. Traumatic occlusion can also play a major role in initiation of an endodontic –periodontal lesion.[1] Occlusion is just the physical contact between the occluding surfaces of opposing teeth, but it is a dynamic interaction between the components of the masticatory system like teeth, supporting periodontal tissue and alveolar bone, neuromuscular system, TMJ and craniofacial skeleton.[2] The balance among the masticatory system can be disrupted by trauma that includes iatrogenic factors, parafunctional habits etc. Various signs and symptoms of trauma from occlusion includes thermal or pressure sensitivity, intermittent dull aching or sharp pain, fremitus or abnormal tooth mobility, alteration in lamina dura or widening of the periodontal ligament space, and mechanical wear of the hard dental tissues. The role of occlusion has always been overlooked during diagnosis and treatment planning. Hence. accurate diagnosis and identification of the cause becomes paramount when analyzing the presenting problems in order to avoid improper treatment or interfering with the adaptive capacity of the masticatory system.

This paper describes one such case where there was severe bone loss because of traumatic occlusion.

CASE REPORT

A 24 year old male patient reported to the department of Periodontology with a chief complaint of shaking tooth wrt upper left back tooth region since three months. Medical history was noncontributory. On intraoral clinical examination, grade II mobility was observed wrt 24 and grade I mobility wrt 26. 5mm pocket depth with CLINICAL ATTATCHMENT LOSS (CAL) of 7 mm was seen wrt 24 and 11 mm pocket depth with CAL of 13 mm was observed wrt 26. Grade I furcation involvement was also seen wrt 26. There was no evidence of caries. It was observed that patient had traumatic occlusion wrt second and third quadrant posterior teeth. Electric pulp testing and thermal testing was done, which confirmed that the both 24 and 26 were non-vital.

On radiographic examination, there was bone loss almost extending till apex of 24 and noticeable bone loss wrt 26. Even though the patient was asymptomatic, bone loss extending till apex was observed wrt 36 with a pocket depth of 10 mm, CAL 12mm, grade I mobility and grade II furcation involvement.

The clinical and radiographic findings suggested of a combined endo-perio lesion wrt 24, 25, 26 and 35,36 due to trauma from occlusion. 24, 26 and 36 was non vital. Extraction of 24 was advised for the patient. But he wasn't willing for the same. Hence, initially root canal therapy followed by periodontal surgery was suggested for the patient. Scaling and root planing(SRP) was done and the patient was recalled after one week for re-evaluation. After one week of SRP, root canal therapy (RCT) WRT 24, 26 and 36 was done.

Root canal treatment was first initiated for 24 and 26. Endodontic treatment was performedin two appointments. Endodontic access cavity was prepared on 24 and 26 under rubber dam isolation, canal patency was established using 10 K files and working length was determined. Cleaning and shaping of the root canal was performed by using Protaper (Dentsply Maillefer) rotary files under copious irrigation with saline, 3% sodium hypochlorite solution and 17% EDTA. Calcium hydroxide intracanal medicament and temporary fillingwas placedand occlusal reduction was done to relieve the trauma from occlusion. The patient was recalled after 10 days, teeth were asymptomatic and were obturated. Permanent restotationwas done with posterior composite resin. Root canal treatment on 36 also was performedfollowing the same protocol in two appointments. Three months after the endodontic treatment the teeth were asymptomatic and the periodontal treatment was initiated.

Pre-procedural mouth rinse was given. Adequate amount of local anesthesia was given wrt 23-27 region. A full thickness flap was raised and open flap debridement was done using gracey curettes #9-10,#11-12,#13-14,4R-4L. After the debridement, pre-suturing was done. NANOGEN bone graft was placed wrt 24 and PRF was placed wrt 26. Sutures were placed. Post operative instructions were given. Patient was put under analgesics and antibiotics. Patient was recalled after one week for suture removal. The patient was put on regular recall at 1 and 3 months. Following the three months follow up the tooth was asymptomatic with reduction in mobility to grade I. The probing depth was 3mm all around the tooth and there was no evidence of inflammation. Radiographic examination revealed evidence of regeneration of the bone. The patient is still under follow up.

Pre-procedural mouth rinse was given. IANB nerve block was given wrt third quadrant. A full thickness flap was raised and open flap debridement was done using gracey curettes #9-10,#11-12,#13-14,4R-4L. After the debridement, pre-suturing was done. NANOGEN bone graft and PRF was placed wrt 36. Sutures were placed. Post operative instructions were given. Patient was put under analgesics and antibiotics. Patient was recalled after one week

for suture removal. The patient was put on regular recall at 1 and 3 months. There was reduction in pocket depth. Radiographic examination revealed evidence of regeneration of the bone. The patient is still under follow up.

DISCUSSION

The healing of an endodontic lesion is always highly predictable but the repair or regeneration of periodontal tissue is questionable if associated with it. The inflammatory changes in the pulp and supporting periodontal tissues in response to occlusal trauma tend to be transient. The cells of the pulp and periodontium have a great potential for healing. The inflammation may resolve when the stress or the traumatic occlusion has been relieved. It is important to relieve the occlusion adequately during and after endodontic treatment in order to remove the tooth from function.

Both endodontic as well as periodontal therapy is needed for the successful management of combined lesions. There are several classifications for endo-perio lesions. On the basis of the pathologic origin, Simon et al.[3] had classified endodontic-periodontal lesions into,

1. Primary endodontic lesions
2. Primary endodontic lesions with secondary periodontic involvement
3. Primary periodontic lesions
4. Primary periodontic lesions with secondary endodontic involvement
5. True combined lesions.

This case report discusses a combined endodontic periodontal lesion with traumatic occlusion.

Since, tooth #24 and #36 was non vital, RCT was planned. An ideal time gap after endodontic therapy and before periodontal surgery has also been challenged by controversial findings. It was reported that root canal treatment performed 2.5 months before periodontal surgery does not impair periodontal healing.[4] Miranda et al. suggest that endodontic treatment performed 6 months before the surgical debridement of the furcation of mandibular molars did not impair the clinical parameters of periodontal healing.[5] In the present case report, root canal treatment was performed3 months before the periodontal surgery. But this result should be confirmed by future clinical studies.

During re-evaluation it was confirmed that there was secondary periodontal involvement which needed periodontal intervention. Johnson et al had described Periodontal Treatment Needs System (PTNS) which is based on the motivation and instruction in effective oral hygiene measures, subgingival debridement of the root surfaces of periodontally involved teeth and debridement facilitated by surgery.[6]

With respect to #24, bone graft used was NanoGen® bone graft. NanoGen undergoes controlled degradation over a period of 12 weeks as compared to 4 to 6 weeks for traditional calcium sulfate. As it degrades, it leads to the formation of calcium phosphate which is the main inorganic component of bone and which also serves as a stimulus for further bone regeneration. Osteoblasts attach to the calcium phosphate and deposit more bone in the defect.[7] There was significant amount of bone fill which was evident during the follow up x-rays taken.

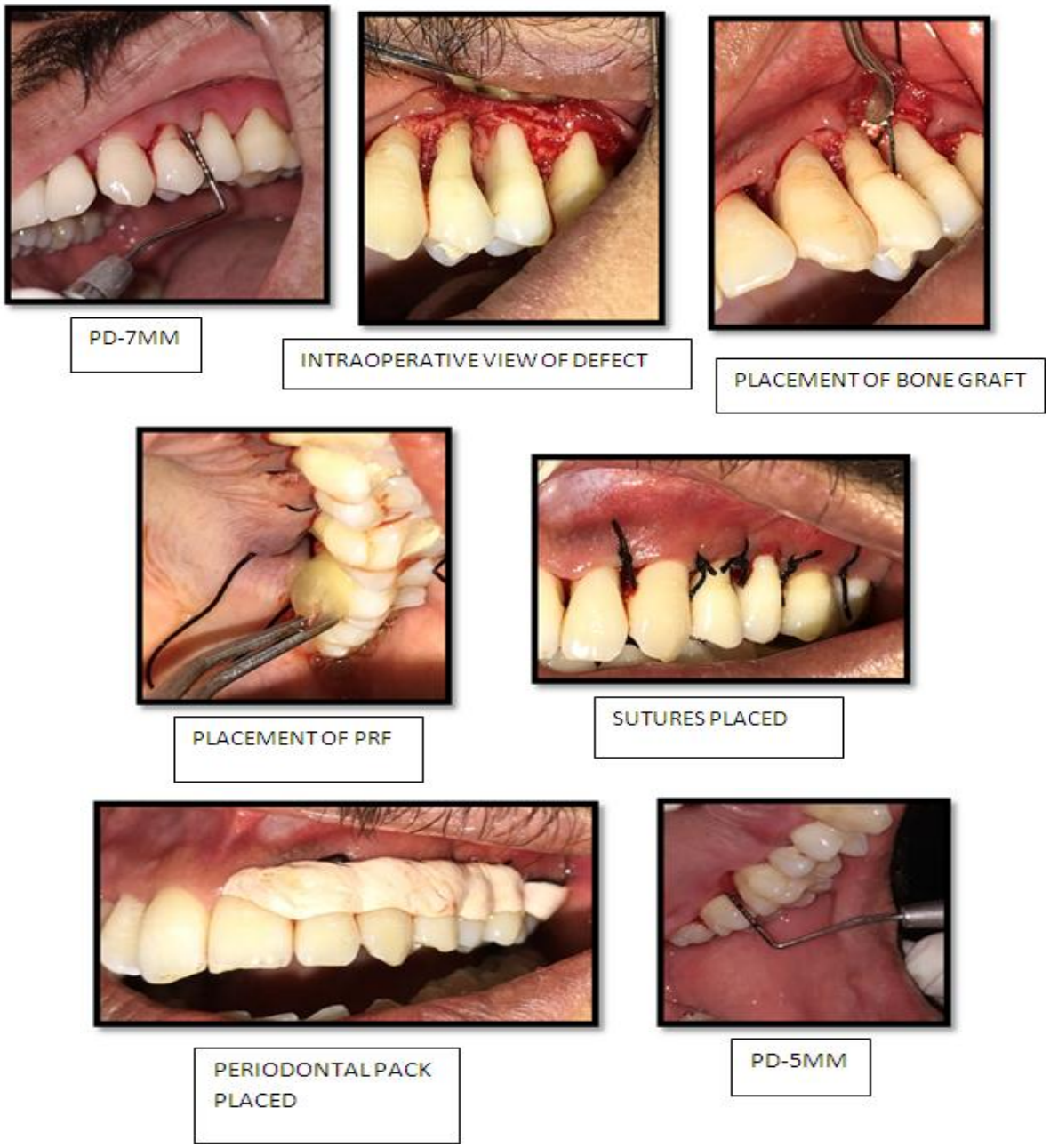
With respect to #26, PRF was placed. PRF is a second generation platelet concentrates. They are important reservoirs for growth factors as they release high concentration of biologically active proteins. These proteins support recruitment of cells from surrounding host tissue and stimulate growth and cell morphogenesis, thus promoting bone and soft-tissue healing. It consists of growth factors such as platelet-derived growth factor, vascular endothelial growth factor, transforming growth factor-B, insulin-like growth factor, bone morphogenetic protein, healing matrix proteins, or cytokines etc. The PRF was prepared following the protocol developed by Choukroun et al. The patient's blood sample was drawn. Immediately after the blood draw, the dried monovettes (without anticoagulant) were centrifuged at 3000 rpm for 10 minutes in the tabletop centrifuge. A structured fibrin clot formed in the middle of the tube, just between the red corpuscles at the bottom and acellular plasma at the top (Platelet Poor Plasma-PPP). PRF was separated from red corpuscles at the base, preserving a small red blood cell (RBC) layer, using a sterile tweezer and scissors just after removal of Platelet Poor Plasma (PPP) and then transferred onto a sterile dappen dish. After pre-suturing the area, PRF was placed.

With respect to #36, a combination of PRF and G-Bone was used. G bone 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 post op 6 month results had shown a significant amount of bone fill.[7] First, the bone graft was placed, followed by placement of PRF. Wang and Boyapati suggested PASS principle that is critical for bone regeneration: primary wound closure, angiogenesis as a blood supply and source of undifferentiated mesenchymal cells, space maintenance, and stability of the wound.[8]

FIGURES

w.r.t. 24, 26



w.r.t. 36

PD-10MM

INTRAOPERATIVE VIEW OF DEFECT

PLACEMENT OF PRF

PLACEMENT OF BONE GRAFT

SUTURES PLACED

PERIODONTAL PACK PLACED

RADIOGRAPHS

w.r.t. 24, 26

w.r.t. 36

CONCLUSION

Endodontic treatment mostly should precede the periodontal management of the lesion in the case of a primary endo and secondary perioinvolvement, however, endodontic therapy commonly results only in resolution of the endodontic component of involvement and has little effect on the periodontal lesion. This case report shows that proper diagnosis, followed by elimination of etiological factors and utilizing a multidisciplinary treatment approachcan restore the functional status of teeth with endo-perio lesions.

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