Single Flap Approach with Lingual Access in Conjugation with PRF and Biograft HABG for the Management of Residual Grade II Furcation Defect Occurring from Primary Endodontic with Secondary Periodontal Lesion: An Interdisciplinary Case Report

ABSTRACT

The success of an endodontic and periodontal lesion depends on the elimination of both of these disease processes; as the endodontic therapy results in healing of the endodontic component of involvement while the prognosis or outcome of tooth would finally depend on the healing of the periodontal structures. In this case report, a residual grade II furcation defect of primary endodontic with secondary periodontal lesion was managed by endodontic therapy followed by periodontal regenerative therapy with BioGraft® hydroxy apatite active bone graft (HAGB) and platelet rich fibrin (PRF) utilizing single flap access technique. At 6 months post operatively there was reduction in periodontal pocket and gain in clinical attachment level with complete regeneration in grade II furcation bone defect was observed without any post operative complication.

KEYWORDS endo-perio lesion, residual grade II furcation, root canal therapy, periodontal regeneration, single flap access

INTRODUCTION

Pulpal and periodontal problems are responsible for more than 50% of tooth mortality. The relationship between periodontal and pulpal disease was first described by Simring and Goldberg in 1964. The endodontic-periodontal (endo-perio) lesion describes that the lesions occur due to inflammatory products found both in periodontium and pulpal tissues. The major pathways for communication and extension of the disease from the pulp to periodontium are through lateral canals and the apical foramen etc.

The success of endo-perio lesion depends on the elimination of both disease processes by mean of endodontic therapy which eliminates the endodontic component of involvement followed by periodontal therapy which further precipitates periodontal healing at the involved site upon which the final prognosis of the tooth depends.

The present case report presents the successful management of residual grade II furcation defect occurring from primary endodontic with secondary periodontal lesion through an interdisciplinary approach.
CASE REPORT

A 28-year-old systemically healthy female patient reported to the outpatient Department of Periodontology with chief complaint of pain in right lower back tooth region since the last 15 days. Past dental history revealed crown placement with respect to (w.r.t) tooth no. 46 by private practitioner 6 months back. Intraoral examination revealed metal crown on 46 which was tender on percussion, with vertical and horizontal probing depth of 6 mm both at mid-lingual and lingual furcation (Figs. 1, 2), otherwise periodontally healthy. IOPA X-ray of 46 revealed secondary caries approaching the distal pulp horn with inter-radicular bone loss (Fig. 3). Pulp vitality examination dictated that tooth 46 was non vital. The case was diagnosed as primary endodontic with secondary periodontal lesion.

Treatment

After phase I therapy, endodontic therapy of 46 was carried out by an endodontist (Fig. 4) and patient was put on observation for 2 months but no improvement was observed in periodontal parameters on lingual aspect of 46. So, regenerative periodontal therapy utilising single flap assess (SFA) in conjugation with Choukroun’s platelet rich fibrin (PRF) and BioGraft® HABG active bone graft was planned and discussed in detail with patient and written informed consent was taken. Before procedure, 10 ml of blood from the antecubital vein was taken in test tube without anticoagulant and immediately centrifuged at 2400–2800 rpm for 12 minutes for PRF preparation.

Crevicular incisions was given on lingual aspect of 45–47 and full thickness flap was raised utilising SFA under local anesthesia, after complete debridement of lingual aspect of 46 showed residual grade II furcation defect (Fig. 5) with vertical bone defect of 4 mm from the marginal bone to the base of the bone with clinical attachment loss (CAL) of 6 mm (Fig. 6) which was filled with amalgamation of PRF with Biograft-HABG graft (Fig. 7) followed by PRF membrane placement at furcation entrance before flap closure (Fig. 8) with direct loop sutures (Fig. 9). Post operative instructions...
were given. Wound healed uneventfully after 10 days and sutures removed (Fig. 10). Maintenance therapy was given after 3-month interval. At 6 months follow up, vertical and horizontal probing depth were reduced from 6 mm to 3 and 2 mm, respectively, with the gain in clinical attachment of 3 mm (Figs. 11, 12) and complete regeneration in residual grade II furcation defect w.r.t 46 was observed radiographically (Fig. 13).

Fig. 5 SFA with lingual access w.r.t 45–47 after debridement of lesion w.r.t. 46 showing residual grade II furcation defect.

Fig. 6 Vertical bone defect depth of 4 mm with clinical attachment loss of 6 mm.

Fig. 7 Furcation defect is filled with mixture of PRF and biograft–HABG.

Fig. 8 Furcation entrance was covered by PRF membrane.

Fig. 9 Securing the SFA with direct loop sutures.

Fig. 10 10 days post operative healing of site.
DISCUSSION

The tooth with a necrotic pulp may pose as a risk factor in initiation of periodontal disease. Endo-perio lesions more frequently observed particularly in 46% of mandibular molars because of greater number of auxiliary canals in furcation region, which may be the reason for endo-perio lesion in the present case.

The successful management of endo-perio lesion required the eradication of both the disease processes. However, if it occur because of endodontic involvement, it is utmost necessary to manage the endodontic challenge first of all; similar findings and management were carried in the present case. As no improvement in periodontal parameters were observed 2 months post endodontic therapy, the collaborative properties of lingual SFA with PRF with BioGraft® HABG Active bone grafts were utilised for the management of residual grade II furcation defect because SFA represents a new surgical technique for the management of soft tissue in periodontal regeneration surgery as it consist of full thickness flap elevated only on one side, leaving the other side intact; as it have several clinical and technical advantages like facilitates flap repositioning, easy stabilisation of lingual flap to undetached lingual papilla, better preservation of blood supply in the interdental area may occur as cited in the report of Trombelli L et al., Choukroun’s PRF is enriched with platelets, cytokines, and growth factors that enhances the healing potential of both the soft and hard tissue healing, when used as a membrane or as a grafting material creates an improved space making effect which facilitates cell events that are favorable for periodontal regeneration leading to mineralised tissue formation and it also induces the cell proliferation of osteoblasts, periodontal ligament cells, growth factors but suppress the oral epithelial cell growth whereas BioGraft® HABG active is a new generation composite bioactive material of calcium phosphate and silica which bond with host bone faster than hydroxyapatite ceramic and resorbs slowly than pure bioactive glass products, therefore used here for periodontal regeneration. These properties of different regenerative approaches utilised in the present case report may have resulted in the reduction in probing depth, gain in clinical attachment which is in accordance with the reports of Debnath et al. and Sharma et al., but to the best of our knowledge complete regeneration of residual grade II furcation defect in endo-perio lesion was only observed in the present case report without any post operative complication 6 moths post operatively.

CONCLUSION

SFA in conjugation with amalgamation of Choukroun’s PRF and BioGraft® HABG graft resulted in improvement in clinical parameters with complete regeneration in grade II furcation defect.
REFERENCES