



Rescuing Tooth with Regenerative Technique: A Case Report

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Abstract

A 29-year-old patient with complete denudation of buccal root of tooth no. 14 was referred from the Department of Oral Surgery for opinion, as he was not willing for extraction. Patient's persistent urge to save the tooth, put forth a challenge, which motivated us to tweak the established techniques. The unusual presentation of the case and unexpected condition of the surgical site required out-of-box measures to deal with the situation. Though, the tooth no. 14 was having Grade-I mobility, it was endodontically treated, buccal root was resected, nanohydroxyapatite graft, platelet rich fibrin, and free gingival graft was applied over the deficient ridge to cover the surgical site. Tooth survived, mobility reduced and complete root coverage procedure with soft tissue was observed at 3 months and 6 months interval. Hence this case report describes, with tangible results using combined interdisciplinary approach involving sophisticated perioplastic surgical technique, root resection and endodontics to salvage a maxillary 1st premolar recession defect with furcation involvement.

Keywords: Denudation, root-resection, regeneration, nanohydroxyapatite graft, platelet rich fibrin and free gingival graft

Introduction

Gingival recession is an intriguing and complex phenomenon and is defined as exposure of the root surface due to the displacement of the gingival margin apical to the cemento-enamel-junction. Its etiology is multifactorial like, plaque-induced inflammation, calculus, iatrogenic restorations, trauma from improper oral hygiene practices, tooth malposition, high frenum, and uncontrolled orthodontic movements [1]. Gingival recession is also a common outcome of the therapies delivered to treat periodontal disease [2].

Even though, gingival recession may occur without any symptoms it can give rise to patient's concern about loss of the tooth, poor esthetics, root caries, dentine hypersensitivity and inability to perform oral hygiene procedures. To meet the increased expectation of patients, newer treatment strategies have evolved to salvage even the most dilapidated tooth by perio-plastic surgery and interdisciplinary approach involving endodontics. In premolars, if there is simultaneous furcation involvement, which has the worst prognosis, management becomes a challenge. The furcation can be eliminated by root-resection, but coverage of the remaining root requires

perioplastic-surgery with attempts for regeneration. Periodontal-plastic surgery is one of the recent emerging surgical modality in periodontics to save a tooth. It provides us with an excellent opportunity to restore the form, function and esthetics of an individual in even very challenging circumstances. The pedicle graft was the first periodontal plastic surgical procedure proposed in 1956 for root coverage [3] in incision design. All these procedures have a common requirement of adequate width of attached gingiva prior to root coverage procedures [4]. This article describes a case report, in which tangible results have been achieved using combined interdisciplinary approach involving sophisticated perio-plastic surgical techniques, root-resection, and endodontics to salvage a maxillary first premolar recession defect with furcation involvement.

Case Report

A 29-year-old male patient complaint of bleeding and receding gums throughout the mouth and recurrent pain with root exposure in relation to upper right first premolar since last 6 months. History revealed – vigorous horizontal scrubbing brushing method, progressive apical migration of the marginal gingiva in no. 14. On clinical examination generalized recession and mild to moderate probing pocket depths (3–5 mm) could be appreciated. The tooth no. 14 exhibited complete exposure of the buccal root, loss of vitality (upon electric pulp test), Grade III furcation involvement and Grade I mobility.

Management

Phase I therapy comprised of scaling and root planning, rolling method of brushing, and occlusal corrections, followed by endodontic treatment, resection of buccal root and perio-plastic surgery for coverage of partially visible palatal root.

The affected tooth had a completely denuded and prominent buccal root, which could hinder the treatment

outcome. Hence, the buccal root was resected using a tapered fissure bur at the furcation level obliquely. Almost two-third of the buccal aspect of the palatal root was visible. Its apical-third and palatal aspect were still embedded within bone and probably this was the reason for Grade-I mobility despite extensive bone-loss. Subsequently, lateral pedicle flap from the adjacent premolar, along with bone graft, was planned.(Figure 1)



De-epithelization of the mesial papilla of no. 14 was done using a no. 15 blade and recipient bed were prepared. After trans-gingival probing over buccal attached gingiva to rule out dehiscence/fenestration, sub-marginal incision was made leaving 2 mm of the gingival margin in the second premolar using a no. 11 blade. Vertical incision along the distal line angle of the second premolar was then taken taking into by raising of partial thickness flap beyond the mucogingival junction to achieve coverage by flap without tension. Nanohydroxyapatite graft, platelet rich fibrin and free gingival graft was applied over the deficient ridge to cover the surgical site. Flap was then displaced laterally and carefully stabilized with interrupted and stabilizing nonresorbable sutures. Periodontal dressing was given over aluminium-foil on the site. The patient was discharged with postoperative instructions and medications (Amoxicillin 500 mg tds for 5 days and paracetamol 625 mg bid for 3 days after the consultation with his treating physician), and chlorhexidine

mouth-wash twice daily for 10 days. The patient was recalled after 10 days for suture removal and check-up. There was no postoperative complication and healing was satisfactory. The defect created at the donor site was healing by secondary intention. The patient was instructed to use a soft toothbrush. He was monitored on a weekly schedule postoperatively, to ensure good oral hygiene of the surgical area. The re-evaluation of this area at 3-month follow-up showed no relapse or recession. The healing was uneventful. Six months showed no recession and gingival margin appeared stable.(Fig 2 to fig Fig 9)



Fig 4 : Prf and nanohydroxyapatite graft placed



Fig 5 Graft placed and sutured



Fig 6: periodontal dressing given



Fig 2:Root amputation done



Fig 3: Palatal graft taken



Fig 7: Periodontal dressing given



Fig 8: post operative view after 6 months



Fig 9 : Post operative view after 6 months.

Discussion

Gingival recessions may occur without any symptoms, but may give rise to the patient concern for poor esthetics, hypersensitivity, inability to perform oral hygiene procedures, and tooth-loss. The initial step was correction of the etiological factors. With the advent of newer

periodontal-plastic surgical procedures, numerous techniques can be applied for the treatment of denuded roots and other mucogingival defects, but it is often difficult to anticipate the success rate of root coverage procedures since coverage depends on several factors, including the type and location of the recession and the technique used. The selection of the surgical technique also depends on several factors, including the anatomy of the defect site, size of the recession defect, the presence or absence of keratinized tissue adjacent to the defect, the width and height of the interdental soft tissue, and the depth of the vestibule or the presence of frenula [5].

In the present case vigorous brushing technique, assumed to be the main etiology for recession, was corrected first. The loss of the proximal interdental tissue and prominence of root are important factors, which affect the successful outcome of the treatment. Furcation aids in progression of the disease and here, there was early furcation involvement due to short root trunk. Moreover, in premolars the opening of furcation is on the mesial and distal aspect, which deteriorates the prognosis and makes coverage difficult. Hence, the prominent buccal root was completely resected and the prominence of the root-trunk was also reduced. The tooth was having Grade I mobility only, because of sound bone around palatal root. The relatively coronal level of proximal tissue favored the outcome. Almost all the indications and favorable conditions for laterally positioned flap, as described above were available in the present case except 2 mm of gingival recession on tooth no. 15. Due to this, there could be a possibility of postoperative gingival recession at donor site tooth no. 15 and to prevent this, sub marginal incision was performed. Furthermore, it was having favorable 4 mm of attached gingiva, which favored selection of this design of the flap. Usually, premolars have a minimum width of attached gingiva ranging between 1.5 and 2.5

mm. However, here there was sufficient width, length, and thickness of keratinized tissue adjacent to the area of gingival recession. It is well stated that a better root coverage outcomes can only be achieved in cases with adequate height and width of adjacent keratinized tissue [6]. The advantages of free gingival graft has a very good blood . The color of the graft matches the area so well where this technique provides good esthetics. Bone graft was placed in order to provide scaffold and compensate the depression in the ridge due to root-resection.[7]. There is an improvement in esthetic outcome [8]. Precise determination of the location of the CEJ and mucogingival junction prior to surgery and precise placement of incisions are necessary in order to achieve optimum esthetics [9] .Studies have shown that with a rigid case selection of free gingival graft is an effective method in treating isolated gingival recession[10]. Root-resection has been implied to eliminate the furcation which favored the treatment. In this case, a successful management of denuded buccal root of a maxillary first premolar was possible with advanced perio-plastic surgical procedures providing esthetic satisfaction and salvaging the tooth that was the prime concern of the patient. Clinical results 1-year postoperatively were conducive with no recession. Thus, it can be construed that with diligent design, perio-plastic surgery can be implied to revamp the esthetics as well as banish the disease, even in the furcationally involved premolar.

Conclusion

Esthetic surgery is performed to reshape the affected structures in order to ameliorate the patient's appearance. The free gingival graft may still be the best treatment choice for gingival recession when an increase in the apicocoronal amount of the keratinized gingival tissues with nanohydroxyapatite graft, platelet rich fibrin is a desirable treatment outcome. With the interdisciplinary

treatment approach and perio-plastic surgery the tooth which are usually extracted can now be saved.

References

1. Tugnait A, Clerehugh V. Gingival recession-its significance and management. J Dent 2001;29:381-94.
2. Zucchelli G, Clauser C, De Sanctis M, Calandriello M. Mucogingival versus guided tissue regeneration procedures in the treatment of deep recession type defects. J Periodontol 1998;69:138-45.
3. Grupe HE, Warren RF. Repair of gingival defects by sliding flap operation. J Periodontol 1956;27:92-5.
4. Wade AB. Vestibular deepening by the technique of Edlan and Mejchar. J Periodontal Res 1969;4:300-13.
5. Zucchelli G, Testori T, De Sanctis M. Clinical and anatomical factors limiting treatment outcomes of gingival recession: A new method to predetermine the line of root coverage. J Periodontol 2006;77:714-21.
6. Verma PK, Srivastava R, Chaturvedi TP, Gupta KK. Root coverage with bridge flap. J Indian Soc Periodontol 2013;17:120-3.
7. Miller PD Jr. A classification of marginal tissue recession. Int J Periodontics Restorative Dent 1985;18:444-53.
8. Kerner S, Sarfati A, Katsahian S, Jaumet V, Micheau C, Mora F, *et al.* Qualitative cosmetic evaluation after root-coverage procedures. J Periodontol 2009;80:41-7.
9. Maynard JG Jr, Wilson RD. Physiologic dimensions of the periodontium significant to the restorative dentist. J Periodontol 1979;50:170-4.
10. Jagannathachary S, Prakash S. Coronally positioned flap with or without acellular dermal matrix graft in the treatment of class II gingival recession defects: A randomized controlled clinical study. Contemp Clin Dent 2010;1:73-8.