Case Report
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Stimulating Periosteum Prior to Grafting Procedure

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Background: Gingival recession is the apical shift in the gingival margin causing denudation of the root surface. Receded gingiva can produce tooth hypersensitivity, root caries and aesthetic distress. The treatment plan for the gingival recession should begin with non-surgical therapy. In case of hypersensitive dentin, it is ideally treated by prescribing desensitising toothpaste. If the root surface exposure causes aesthetic distress; root coverage is the treatment of choice. Goldman introduced stimulated mucoperiosteal pedicle graft for root coverage procedure. The concept of stimulated periosteum is used to reactivate the periosteum by controlled surgical trauma. The reactivated periosteum will activate the progenitors in the local site in turn helping in the regeneration.

Conclusion: This paper describes in brief the stimulation of the periosteum for activation of progenitors during a root coverage procedure.

Key words: Stimulation, periosteum, progenitors, regeneration.

Introduction

Gingival recession is the apical shift in the gingival margin causing denudation of the root surface. Receded gingiva can produce tooth hypersensitivity, root caries and aesthetic distress (1, 2). The treatment plan for the gingival recession should begin with non-surgical therapy. In case of hypersensitive dentin, it is ideally treated by prescribing desensitising toothpaste. If the root surface exposure causes aesthetic distress; root coverage is the treatment of choice. Various techniques have been proposed for root coverage and increasing the width of the attached gingiva; these include pedicle rotational flap, coronally advanced flap, epithelised soft tissue graft, subepithelial connective tissue graft, guided tissue regeneration and root coverage following elimination of aberrant frenum (3-5).

In 1990, Goldman proposed the stimulated osteo-periosteal graft for root coverage procedure. This was based on the hypothesis that the inducible osteogenic precursors can migrate to injured area in response to injury and their potential to induce osteogenesis may well be proven to be the most important factor in the repair of the bone (6,7). The stimulation of the periosteum for activation of progenitors is briefly described in this paper.

Case Presentation

Systemically healthy male patient who was 23 years reported to the Department of Periodontology, MCODS, Manipal, Manipal University, complaining of esthetic distress due to unesthetically long teeth in relation

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to the lower front teeth. On examination Miller's class 1 recession (8) (*Figure-1*) with respect to the lower front two teeth 31 and 41 was noted. Patient was enrolled for the treatment after obtaining consent from the patient.

Figure-1: Preoperative image

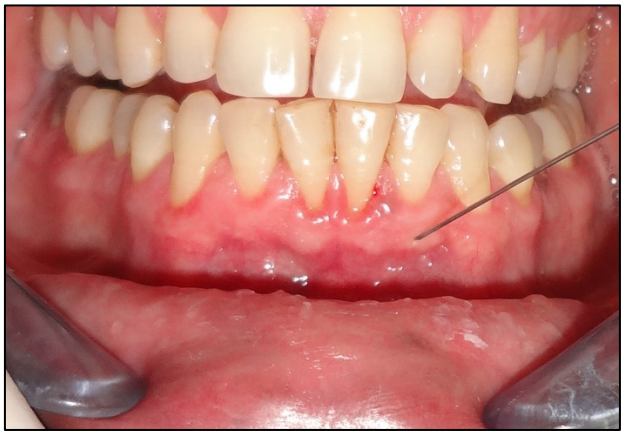

Figure-2: Stimulating Periosteum

Figure-3: Image after stimulation

Initial therapy included full mouth supragingival scaling and oral hygiene instructions. Patient was recalled after 2 weeks for evaluation of oral hygiene maintenance and recording baseline scores. The gingiva appeared to be healthy and free of any clinical evidence of inflammation.

Figure-4: Lateral pedicle flap

Figure-5: Image after suturing

Stimulating the periosteal graft is ideally done 2-3 weeks before the actual surgical procedure. A 24 gauge hypodermic needle attached to a syringe for better leverage was used for stimulating the periosteum of adjacent teeth 32 and 42. Multiple penetrations were made at an acute angle to lift the underlying periosteum engaging it firmly at the adjacent areas of the recession (*Figure 2 & 3*).

Figure-6: Image after 10 to 15 days

Surgical Procedure

The area to be operated was isolated and dried with cotton gauze. Local anaesthetic solution 1:200000 Lidocaine hydrochloride with adrenaline (*Xylocaine 2% Adrenaline, Astra Zeneca pharma*) was used in local infiltration and the area was freed from saliva. Following Sulcular incision two vertical incisions were placed at the line angles of adjacent tooth.

The vertical incisions extended beyond the mucogingival junction. This procedure was repeated on the adjacent side (*Figure-4*). Pedicle flaps were reflected from both the sides and were sutured at the midline. Silk suture 4-0 (Mersilk, Ethicon, Johnson & Johnson) was used for suturing the flaps (*Figure-5*). Initial sling sutures were placed to anchor the flaps. This was then secured using horizontal interrupted sutures by joining both the flap at its centre. And then a periodontal dressing (*Coe-Pak, GC America*) was given. Analgesic and 0.2% chlorhexidine mouthwash (Hexidine, ICPA Health Products) were prescribed for 5 days. Patient was recalled after 10-15 days (*Figure-6)* after the procedure.

Discussion

Regeneration of the Periodontium is the expected outcome of any periodontal surgical procedure. The stimulated periosteum not only have ample amount of growth factors but also progenitors which aid in the process of regeneration. Inducible Osteogenic Precursor Cells (IOP cells), are the cells which descend from hemopoietic stem cells and differentiate into osteoblasts but only under appropriate stimuli (9). The treatment of gingival recession by periosteal stimulation can provide with cells for regeneration (10). Utilising this stimulated osteoperiosteal graft for gingival recession shows predictable result in terms of patient acceptance and root coverage.

Conclusion

Successful root coverage can be achieved if correct fundamental principles of biologic tissue are applied. Stimulating the periosteum prior to the root coverage procedure can facilitate healing process providing rapid results.

Conflict of Interest

The authors declare that no conflict of interest exists in publishing this article.

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Reference

1. Kassab MM, Cohen RE. The etiology and prevalence of gingival recession. J Am Dent Assoc 2003: 134: 220–225. Litonjua LA, Andreana S, Bush PJ, Cohen RE. Toothbrushing and gingival recession. Int Dent J 2003;53:67–72.
2. Oates T. W, Robinson M & Gunsolley J. C. Surgical therapies for the treatment of gingival recession - A systematic review. Ann Periodontol 2003;8:303–20.
3. Leknes K. N, Amarante E. S, Price D. E, Boe O. E, Skavland R. J. & Lie T. Coronally positioned flap procedures with or without a biodegradable membrane in the treatment of human gingival recession - A 6-year follow-up study. J Clin Periodontol 2005;32:518–29.
4. Bittencourt, S, Del Peloso Ribeiro E, Sallum E. A, Sallum A. W, Nociti F. H. Jr. & Casati M. Z. Comparative 6-month clinical study of a semilunar coronally positioned flap and subepithelial connective tissue graft for the treatment of gingival recession. J Periodontol 2006;77:174–81.
5. Santhosh Kumar, Gautham Suresh P, K. Meena Anand. A Novel Single-Stage Procedure for Increasing the Width of Attached Gingiva and Eliminating the Aberrant Frenal Attachment. J Dent (Shiraz) 2015 Mar; 16(1):58-61.
6. Roccuzzo M, Bunino M, Needleman I & Sanz M. Periodontal plastic surgery for treatment of localized gingival recessions: a systematic review. J Clin Periodontol 2002;29:178–94.
7. Pagliaro U, Nieri M, Franceschi D, Clauser C & Pini-Prato G. Evidence-based mucogingival therapy. Part 1: a critical review of the literature on root coverage procedures. J Periodontol 2003;74:709–40.
8. Miller P D. A classification of marginal tissue recession. Int J Periodont Rest 1985;5:8–13.

9. H. Smukler and H. M. Goldman. Laterally repositioned stimulated osteoperiosteal pedicle grafts in the treatment of denuded root. A preliminary report. Journal of Periodontology 1979;50(8):379- 383.
10. Henry M. goldman and hyman smukler. Controlled surgical stimulation of periosteum. Journal of Periodontology 1978;49(10):518-522.

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