

FAT CHANGES THE FATE OF MULTIPLE GINGIVAL RECESSION

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Abstract

Gingival recession is a condition resulting in root exposure of multifactorial etiology including high muscle attachments, frenum pull, iatrogenic factors, traumatic brushing, tooth malposition etc. which leads to root sensitivity, pain, root caries, plaque retention, poor esthetics, and tooth loss. Over the last few decades, many different approaches for the treatment for gingival recession have been reported in the literature without a consistent consensus. However, it has been reported that pedicle grafts result in predictable root coverage.

Buccal fat pad (BFP) is a specially organized and encapsulated fatty tissue that has the property of maintaining its volume and structure over a long period of time with advantage of anatomically favorable location, the ease and minimal dissection with which it can be harvested and mobilized, excellent blood supply, simplicity, versatility, low rate of complications, minimal to no donor site morbidity.

The aim of this case report is to establish a new technique for root coverage using pedicled BFP in Miller Class I recession on the multiple maxillary posterior teeth.

Keywords: Gingival recession, Pedicled Buccal Pad of Fat, Root sensitivity, Root coverage.

Introduction

Gingival recession is defined as “the displacement of marginal tissue apical to the cemento-enamel junction (CEJ)”.¹ Literature has identified many reasons for gingival recession, including high muscle attachments, frenum pull, iatrogenic factors, traumatic brushing, tooth malposition etc.² It leads to root sensitivity, pain, root caries, plaque retention, poor esthetics, and tooth loss. The extent of GR increases with age and in males, smokers, and buccal sites and in sites with supra- and sub-gingival calculus. Gingival recession may be localized or generalized and can be associated with one or more tooth surfaces.³ Periodontal treatment aims to protect and maintain the patient’s oral health over his lifetime for adequate function as well as esthetic appearance. Over the last few decades, many different approaches for the treatment for gingival recession have been reported in the literature without a consistent consensus.⁴ Since mid 20th century, different techniques have been developed to cover denuded roots. Free autogenous grafts and pedicle grafts including rotational flaps, advanced flaps, and semilunar flaps have been advocated. Combination grafts with either autogenous grafts or allograft and with GTR membranes were developed later to correct mucogingival defects.⁵ The prognosis for Miller’s Class I and II GR defects is usually good, predicting almost 100% root coverage, whereas only partial root coverage can be expected for Class III and almost none for Class IV GR defects with the current root coverage techniques. However, it has been reported that pedicle grafts result in predictable root coverage.⁶

The buccal fat pad (BFP) was first described by Heister in 1732 and the PBFP by Egyedi in 1977 for the closure of oroantral communications. BFP is a specially organized and encapsulated fatty tissue confined to the masticatory space between the buccinator muscle medially and masseter muscle laterally. It has three lobes (anterior, intermediate, and posterior), and the posterior lobe has four extensions

(buccal, pterygoid, pterygopalatine, and temporal). Its volume is -10 cm^3 , with a length of $\sim 60 \text{ mm}$, a width of 50 mm , and a thickness of 6 mm . Vascular supply is provided by superficial temporal, infraorbital, transverse facial, and internal maxillary artery. Several nutritional vessels exist in each lobe and together form a subcapsular plexus.⁷

The buccal fat pad (BFP) has been used for reconstruction of oral defects and had shown great success in all of the previous studies owing to its physical and biological properties. The advantages of pedicled buccal fat pad (PBFP) include anatomically favorable location, the ease and minimal dissection with which it can be harvested and mobilized, excellent blood supply, simplicity, versatility, low rate of complications, minimal to no donor site morbidity.⁸

This case report describes the use of pedicled buccal fat pad (PBFP) for the management of multiple gingival recession of maxillary posterior teeth.

Case report

A 38 year old healthy male presented to the Department of Periodontics, Rajah Muthiah dental college and hospital, Annamalai University with chief complaint of sensitivity in upper right back tooth region for past 3 months. On clinical examination, the patient had Miller’s class I gingival recession with adequate zone of keratinized gingiva in relation to 13,14,15 and 16 with attachment loss of 2 to 3 mm without pocket. [Figure 1] The tooth was vital and was not mobile. Treatment plan was to cover the gingival recession present in relation to 13 to 16 using pedicled buccal pad of fat (PBFP). The Phase I therapy of plaque control was done and oral hygiene instructions were given. A week later, the periodontal plastic surgery to cover the gingival recession using PBFP was done as mentioned below.



Figure 1: Preoperative photograph

Surgical procedure

Under local anesthesia (2% lignocaine hydrochloride with 1:80,000 epinephrine), the recipient site preparation was done by elevating a full thickness mucoperiosteal envelope flap from 12 to 17. Open flap debridement and root planing done. [Figure 2]



Figure 2: Open flap debridement and root planing done

Root biomodification done with tetracycline. [Figure 3] Saline irrigation done.



Figure 3: Root biomodification done with tetracycline

Donor site preparation was done by making a horizontal incision antero-posteriorly at the highest point of vestibule in relation to 17. [Figure 4]

Blunt dissection were made through the buccinators and surrounding loose connective tissue fascia by an artery forceps and PBFP is exposed into oral cavity. The body and the buccal extension of PBFP are gently mobilized

preserving the base as wide as possible without disrupting the capsule and vascular plexus. [Figure 5]



Figure 4: A horizontal incision placed antero-posteriorly at the highest point of vestibule in relation to 17



Figure 5: Buccal pad of fat mobilized into oral cavity

The mobilized PBFP is spread and adapted over the root surfaces of 13,14,15 and 16 and stabilized the harvested PBFP with resorbable 5-0 vicryl independent sling sutures. The reflected mucoperiosteal flap is coronally advanced over the stabilized PBFP with vertical mattress sutures with 5-0 vicryl without flap tension. [Figure 6] Non eugenol periodontal pack was placed.



Figure 6: Buccal pad of fat and flap were secured and sutured

Antibiotics and analgesics were prescribed and instructed patient to be on a soft diet, refrain from toothbrushing in the treated area for 6 weeks, rinse with chlorhexidine

(0.12%) mouthwash twice daily for 2 weeks. Post operative healing were uneventful. The patient was followed up till the end of the 3rd month. At 1st week and 2nd week, the color of PBFP changed to pale pink. At the end of the 3rd week, the color of PBFP was reddish pink with shrinkage and discrete areas of epithelialization were evident on its surface. At the end of 3rd month, 100% root coverage was achieved in 14,15,16 and partial root coverage in 13. [Figure 7]



Figure 7: Three months post operative photograph

Discussion

Major therapeutic goals of mucogingival surgery are esthetics, treatment of hypersensitivity and prevention root surface caries.⁹ There have been a number of treatment modalities for managing gingival recession such as free gingival graft, coronally advanced flap, use of barrier membranes, EMD, various growth factors etc., SCTG has become a popular treatment modality for coverage of denuded roots because of its high degree of success. It has shown the best predictability (95%) of root coverage in Millers Class I and II cases.¹⁰ SCTG demands second surgical site for harvesting graft and associated morbidity, and decreased patient's acceptance. Therefore PBFP was used in the treatment of multiple gingival recession in maxillary arch.

The proximity of the donor site (PBFP) to the recipient bed and the accessibility can prove advantageous along with minimal donor site morbidity and patient discomfort. The PBFP has a rich plexus of blood vessels forming an internal microvascular network that ensures the survival of the flap after relocation with no need for anastomosis.¹¹

Interestingly, it has also been found that the stem cells are present in the PBFP that help in periodontal regeneration.¹² The PBFP has been used successfully for reconstruction of the buccal mucosa, palatal mucosa, covering the surface of bone grafts, closure of oronasal fistulas, and posttraumatic reconstruction in the maxillary region.¹³

Based on literature, PBFP has been used as subepithelial graft with coronally advanced flap in root coverage of multiple gingival recession in maxillary arch. In this case report, 100% root coverage was achieved in 14,15,16 and partial root coverage in 13. The disadvantage of using PBFP

is its limited stretchability to preserve its vascularity and not suitable for more anterior teeth and mandibular teeth as pedicled flap

Histological evidence reveals that the fat cells are completely replaced by relatively acellular fibrous tissue and covered by stratified squamous epithelium in 2 – 3 weeks.¹⁴

Conclusion

PBFP as subepithelial graft with buccal flap advancement is a novel approach for covering multiple gingival defects in maxillary posterior teeth owing to less donor site morbidity, rich vascularity and close proximity of donor and recipient site. Thus the fat changes the fate of multiple gingival recession.

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