ORIGINAL RESEARCH PAPER

Volume-8 | Issue-1 | January-2019 | PRINT ISSN No 2277 - 8179

INTERNATIONAL JOURNAL OF SCIENTIFIC RESEARCH

REMARKABLE SURGICAL APPROACH WITH LATERAL PEDICLE GRAFT FOR ROOT COVERAGE IN MAXILLARY MOLAR: A UNIQUE CASE REPORT.

Periodontology

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ABSTRACT

The most common mucogingival deformity recently known is the gingival recession which is needed to be treated as earliest as possible. Gingival recession results in root exposure that is more likely to develop root sensitivity and root caries, esthetic problem and hindrance in oral hygiene maintenance, as commonly seen in anteriors and posteriors. Achievement of complete root coverage is primarily indicated to eliminate all the concerned problems, which can be satisfied by soft tissue grafts. Amongst various approaches, the laterally positioned pedicle graft is relatively easy and not time consuming, produces excellent esthetic results with no second surgical site involvement for donor tissue harvestment. Several studies in literature puts an emphasis on treating gingival recession defects with lateral pedicle graft present on anteriors. The present article puts an emphasis on a unique case report in which laterally positioned pedicle graft has been used for the treatment of gingival recession in maxillary right first molar. This technique offered excellent esthetic outcome for treating isolated gingival recession with dentinal hypersensitivity in molars.

KEYWORDS

Lateral Pedicle Flap, Gingival Recession, dentinal hypersensitivity, isolated gingival recession.

BACKGROUND

Gingival recession is defined as apical migration of gingival margin with the exposure of root surface [1]. Generally. Miller's classification system is the most widely accepted classification system for classifying the recession defects. They are classified as Class I to IV while Class III & Class IV are thought have poor prognosis as compared to Class I & II due to the interproximal; soft tissue and alveolar bone loss [2,3]. The treatment of gingival recession is a challenging task for clinicians as it is associated with esthetic aspects of the patient. The prime of goal of recession treatment according to Miller (1985) and Harris (1994) is to covering the recession up to cemento enamel junction (CEJ), probing depths less than 2mm, no bleeding on probing, wide enough keratinised gingiva (>3mm), smallest possible colour difference from the local gingiva, physiological shape & surface of the gingiva in the former recession area [3, 4]. Amongst the indications given by Erpenstein and Halben, 2004 [5], dentinal hypersensitivity and cervical abrasions are also the indications that are considered for performing root coverage procedures. The type of technique chosen for performing root coverage depends on several factors as stated in a systematic review performed by Ruccozza in 2004 [6]. The flap techniques for performing root coverage procedure can be classified as shown in Table 1 [7]. Free soft tissue grafts required a two-stage surgical procedure or two surgical sites to perform root coverage whereas the other additional methods are relatively cumbersome and costly when compared to the pedicle soft tissue grafts [7]. Pedicle soft tissue grafts also have the advantage of retaining the blood supply to the graft as it has a pedicle that lets the graft derive the blood supply from the donor site [7]. Coronally advanced flaps help in covering both isolated as well as multiple recessions while rotational flaps help in covering isolated recession defects [7]. The semilunar flap helps in covering isolated recession defects but would not help in covering larger defects [7]. So, a case report is presented which explains the lateral pedicle flap that was performed to treat isolated recession defect having dentinal hypersensitivity.

Table 1 Root Coverage Techniques [7]

Pedicle grafts
• Rotational flaps a.Lateral Pedicle Flap b.Double Pedicle Flap
• Advanced flaps a.Coronally Advanced Flap b.Semilunar flap
Free grafts
• Nonsubmerged graft a.One stage (free gingival graft) b.Two stage (free gingival graft with coronally positioned flap)
• Submerged grafts
a.Connective tissue graft with lateral Pedicle flap b.Connective tissue graft with double Pedicle flap c.Connective tissue graft with coronally positioned flap d.Envelope techniques
Additional methods
• Root surface modification agents
• Enamel matrix proteins
• Guided tissue regeneration a.Nonresorbable barrier membrane b.Resorbable barrier membrane

Case Description

A male patient aged 38 years came to the department of periodontology and implantology with the chief complaint of sensitivity in right upper back teeth region for the last 2 months. Patient gave history of sensitivity to hot and cold stimuli which was spontaneous during intake of such diet. Patient was otherwise systemically healthy without any previous history of medical illness or hospitalisation. On examination at the particular region of sensitivity, there were multiple recession defects. On objective examination patient showed sensitivity to hot and cold stimuli with respect to right upper maxillary 1st molar (16) and consisted of Miller's Class I gingival recession of depth 5mm. Treatment plan was explained to the patient that consisted of treating all gingival recession defects along with the replacement of missing teeth. Since the patient had sensitivity to one tooth i.e. 16, he wanted that particular tooth to be treated. After assessing the width of keratinised tissue, it was decided that lateral pedicle flap be performed for treating the isolated gingival recession defect. The surgical procedure was explained, and an informed consent was taken. Regular blood investigations such as bleeding time, Clotting tome, INR ratio, Random Blood Sugar, HbSAg antibody titre etc. were performed to rule out potential conditions affecting the surgical procedure and its outcome.

After achieving local anaesthesia at the desired site, lateral pedicle flap was performed as described by Geupe, 1966 [8]. Briefly, following the gingival contour, leaving 2mm of marginal gingiva an internal bevel incision is made on the second premolar (15) in such a way that a split thickness flap can be raised. A vertical releasing incision is made along the mesial line angle of 15 so that the graft can be moved on to the exposed root surface of 16. To avoid any tension on the graft, a cut-back incision is given in continuation with the vertical releasing incision. Scaling ang root planing was done on the root surface of 16 that was supposed to receive the graft. The lateral pedicle was then moved to cover the recession defect of 16. It was made sure that the graft remained passive and simple interrupted sutures were given. Periodontal dressing was placed at the surgical site and post-surgical instructions were given to the patient. Patient was asked not to brush near the surgical site to avoid trauma to the operated tissues. 0.12% chlorhexidine mouthwash was prescribed until patient resumed regular oral hygiene measures. Patient was recalled after 10 days for sutural removal and was followed up for 3 months. The surgical site healed uneventfully with the recession getting covered completely as opposed to the initial recession depth of 5mm. The entire surgical procedure and the 3 months follow-up have been shown from Figures 1 to 6.



Figure 1. Pre Operative View



Figure 2. Incision Design



Figure 3. Lateral Pedicle Prepared



Figure 4. Lateral Pedicle Graft Sutured



Figure 5. Periodontal Dressing Given



Figure 6. 3 months post operatively

Discussion

This technique of lateral pedicle flap was first advocated by Grupe and Warren in the year 1956 [9]. The indication of this technique is the presence of isolated gingival recession defects with adequate width of keratinised tissue. Later, due to the increased tension that was caused at the graft site Grupe in the year 1966 modified the surgical procedure by giving a cut-back incision [8]. He also suggested that marginal gingiva should not be included along with the graft as it could cause recession of the donor tissue. Staffileno in the year 1964 advocated that partial thickness flap should be raised instead of a full thickness flap for raising the pedicle graft [10]. The studies performed by authors such as Zucchelli et al., 2004 and Chambrone & Chambrone et al., 2009 showed a mean root coverage of 96% and 93.8% respectively [11,12]. Caffesse et al. [13] has performed a study in which he performed lateral pedicle flap on 14 patients. The mean height of gingival recession was 5mm which got reduced to 2.8mm. The decision of choosing this type of technique was also justified by the fact that there was enough width of keratinised gingiva. The decision making for choosing the type of technique was also explained in the article given by Erpenstein, 2006 (Table 2 [5]). The double lateral pedicle flap advocated by Cohen & Ross, 1968 [14] was not performed because the sutures placed on the avascular root surface to approximate both the pedicles would become dehiscent leading to the failure of the procedure. Although the free soft tissue grafts offered similar or superior results in covering the gingival recession the disadvantages such as patient morbidity, two stage procedure, double surgical sites and technique sensitivity are outweighed by the pedicle soft tissue graft procedure.

Table 2 Decision making for choosing the appropriate surgical technique for Miller's class I & II Gingival Recession defects. (KG- Keratinised Gingiva, AF- advanced flap, CTG- Connective Tissue Graft, FGG- Free Gingival Graft) [5].

	Adequate width of KG		Narrow/ Absent KG	
Defect factors	**Narrow (<4mm)**	**Wide (>4mm)**	**Narrow (<4mm)**	**Wide (>4mm)**
Short (<3mm)	Coronally AF/ Semilunar flap	Coronally AF+CTG/FGG (or) Envelope technique + CTG/FGG		
Medium (3mm-5mm)	Coronally AF	Coronally AF+CTG/FGG (or) extended Envelope technique + CTG/FGG		
Long (>5mm)	Unilateral AF	Double lateral AF+CTG	Unilateral AF+CTG /FGG	Double lateral AF+ CTG/FGG

Conclusion

With the advantages such as single stage surgery, single surgical site, retained vascular supply to the graft from the donor site, color match with the local tissue & reduced patient morbidity Lateral pedicle flap offers as a potentially approachable technique for treating isolated gingival recession defects with dentinal hypersensitivity.

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