

Lateral Pedicle Graft with Tetracycline Root Conditioning in the Treatment of Isolated Gingival Recession Defect in Maxillary Anterior Tooth - A Case Report

Dr. Kamal Sagar¹, Dr. Ritika Arora², Dr. Cheena Singh³, Dr. Sumit Kumar Yadav⁴,
Dr. Neal Bharat Kedia⁵, Dr. Arundeeep Kaur Lamba⁶

¹Demonstrator, Departement of Periodontics, Post Graduate Institute of Dental Sciences, Pt. B D Sharma University of Health Sciences, Rohtak, Haryana, India

²Reader, Department of Periodontics, Vaidik Dental College, Daman & Diu, India

³Demonstrator, Departement of Oral Medicine & Radiology, Post Graduate Institute of Dental Sciences, Pt. B D Sharma University of Health Sciences, Rohtak, Haryana, India

⁴Reader, Department of Orthodontics & Dentofacial Orthopedics, Mithila Minority Dental College & Hospital, Darbhanga, Bihar, India

⁵Reader, Department of Orthodontics & Dentofacial Orthopedics, Buddha Institute of Dental Sciences & Research, Patna, Bihar, India

⁶Prof. & Head (Dept. of Periodontics), Maulana Azad Institute of Dental Sciences, New Delhi

Abstract

Background: The coverage of denuded roots represents one of the greatest challenges to periodontal treatment as clinician is not only required to treat disease and improve function but also cope with ever demanding esthetics of patients. Among various techniques used, laterally positioned pedicle graft (LPG) is widely used successfully to cover Miller's class-I and Class-II recession defects because it is relatively easy and less time-consuming, it produces excellent esthetic results and no second surgical site is involved as in FGG/FCG. This article describes a case report in which a pedicle graft technique with tetracycline root conditioning was used to cover recession in maxillary anterior tooth.

Keywords: Gingival Recession, Root Coverage, Pedicle Graft, Tetracycline.

Introduction

Gingival recession is the apical migration of marginal gingiva using the cemento-enamel junction as reference point, consequently exposing the root surface to the oral environment.^[1] It implies the loss of periodontal connective tissue fibers along with root cementum and alveolar bone. More than 50% of the world population has one or more sites of gingival recession ≥ 1 mm.^[2] The most common site involved is the buccal surfaces of the teeth mainly due to vigorous tooth brushing. However, there are several other factors like periodontal disease and improper oral hygiene measures; along with some predisposing factors such as thin gingiva, a prominent root surface, bony dehiscences, abnormal tooth position, frenum pull, mechanical trauma caused by tooth brushing, and iatrogenic factors such as faulty restorations or uncontrolled orthodontic teeth movement and endo-perio lesions, shallow vestibule, lack of keratinized gingiva.^[3] Apart from esthetic concern, exposed root surfaces may also causes root caries and sensitivity.

Miller in 1988 suggested the term "periodontal plastic surgery" (PPS), defined as surgical procedures performed to prevent or correct anatomical, developmental, traumatic or plaque-induced defects of the gingiva, alveolar mucosa, or bone (The American Academy of Periodontology 1996).^[4] One of the most frequent indications of PPS is the treatment of buccal gingival recessions. In the past few decades, various periodontal plastic surgical procedures have been suggested for root coverage. These surgical procedures can be classified as pedicle soft tissue grafts, free soft tissue grafts or a combination of both.

The pedicle graft was the first periodontal plastic surgery procedure proposed in 1956 for root coverage by **Grupe and Warren** as a laterally repositioned full thickness flap. Pedicle grafts are based on the simple concept of moving donor tissue laterally to cover an adjacent defect. It provides sufficient esthetic result. Previously it was described as the

"lateral sliding flap." The procedure was then modified and named as the "laterally positioned flap". The "oblique rotational flap", the "rotation flap", and the "transpositioned flap" are modifications in incision design.^[5] When the lateral movement is both mesial and distal to the defect, the flap is called a double papilla flap.^[6]

Case report

A 19-year-old healthy male patient reported to the Outpatient Department (OPD) Of Endodontics & Conservative Dentistry, Govt. Dental College, Rohtak, Haryana, India with a chief complaint of "an elongated tooth" in the front region of upper jaw. On examination there was Miller's class II gingival recession in the upper right central incisor region with a recession depth 8mm and Clinical Attachment Loss (CAL) of 8mm [Fig-1]. Trauma from occlusion and tooth malposition with respect to the involved tooth was ruled out clinically.



Fig 1. Pre-Operative(showing 8mm of gingival recession)

Pre-surgical preparations

Patient was motivated and educated. Oral hygiene instructions were also given prior to the surgery. Thorough scaling and root planning were done 2 weeks before the procedure.

Surgical Technique

2% lignocaine hydrochloride with 1:80,000 adrenaline, was infiltrated locally to anesthetize the surgical site. The exposed root surface was thoroughly scaled and root planned by using gracey curettes to remove plaque, accretions and any surface irregularities. A no.11 scalpel blade was used to make V- shaped incision around the denuded root, removing the adjacent epithelium and connective tissue. A horizontal incision 1-2mm above the papilla of the adjacent tooth was given and this incision was extended obliquely from line angle till mucogingival junction. The flap was raised using blunt dissection. A cut back releasing incision was made to ensure that the flap is free enough to permit free movement to the recipient site. Before placing the pedicle flap on the denuded root surface, it was carefully examined for any irregularities and plaque.

It was also conditioned with a cotton pellet soaked in a solution of 100 mg/ml tetracycline/saline for 4 min. This was followed by copious irrigation with saline. The pedicle flap was positioned 1 mm coronal to cemento-enamel junction of tooth 11 and sutured by 3-0 silk sutures. The area was protected with Coe-Pack [Fig-2].



Fig 2. Surgical Procedure

Post-operative instructions were given to the patient. He was advised to take analgesic and antibiotics for 5 days. He was also instructed not to brush on the surgical area and use mouthwash 0.2% chlorhexidine gluconate twice daily. Sutures were removed after 10 days of surgery. Examination of surgical site showed complete coverage of root surface of 11 with excellent color matching. Patient was totally satisfied with the treatment outcome. Oral hygiene instructions were reinforced, and patient was instructed to come for regular check-up.

Discussion

Root coverage of severe gingival recession has become an important treatment modality because of the increasing demand for cosmetic and functional treatment. Over the past decades a variety of regenerative procedures have been used to correct gingival recession. The majority of these procedures consist of periodontal plastic surgical (mucogingival) graft techniques, either alone or in combination with guided tissue regenerative procedures^[8]. Various treatment protocols include Free gingival autograft, Free connective tissue autograft^[9], Pedicle grafts^[10] (Laterally positioned, coronally positioned^[11], semilunar pedicle [Tarnow]), subepithelial connective tissue graft^[12], GTR, Pouch and tunnel technique^[13].

In the present case, patient was concerned about unpleasant aesthetics due to gingival recession of front tooth. Success of root coverage procedures depends on several factors like elimination and control of etiology, interproximal bone level, and the choice of best coverage procedure based on the clinical situation. In this case, we chose Lateral pedicle graft technique described by Staffileno because of the good periodontal condition of the neighbouring tooth with adequate keratinized gingival and normal bone height.^[14]

Indications for lateral pedicle grafts are sufficient width, length, thickness of keratinized tissue, coverage limited to 1-2 teeth, sufficient depth of vestibule and narrow mesio-distal dimension of recession. Contraindications are insufficient width, length, thickness of keratinized tissue, presence of fenestration or dehiscence at donor site, extremely protrusive teeth, deep PDL pockets, loss of interdental bone and narrow oral vestibule.

The advantages of lateral pedicle graft are its simplicity, presence of only one surgical site and good vascularity of pedicle. Whereas its disadvantages are that the amount of keratinized attached gingival that is the pre requisite, probable recession at donor site, dehiscence or fenestration at donor and its limitation to only 1-2 teeth. Often times there might be cases of failure to cover the denuded surface and the reasons for that could be attributed to tension at base of distal incision, too narrow pedicle, full thickness flap to cover might lead to exposure of bone which leads to bone loss and poor stabilization & mobility of the graft.

Many modification methods of **Grupe and Warren** have been developed to avoid gingival recession at the donor site. Staffileno advocated the use of a partial thickness flap to avoid the recession at the donor site. Grupe^[15] reported a modified technique to preserve the marginal gingiva by the making a submarginal incision at the donor site. However, laterally positioned full thickness flaps have best prognosis for the exposed root surface coverage. Studies on clinical root coverage by the laterally positioned flap reported about 70% of success rate.^[16]

Conclusion

In the present study a laterally positioned flap with tetracycline root modifiers was used to cover Millers recession defects in the maxillary anterior region. This technique has been demonstrated to be a reliable and predictable treatment modality for obtaining root coverage in recession defects for complete or partial root coverage. However careful case selection and surgical management is critical if a successful outcome is to be achieved

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