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Esthetic Root Coverage by Subepithelial Connective Tissue Graft with Management of Repeated Rupture of Palatal Arterial Bleeding: A Rare Case Report

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Abstract

Nowadays, patients are much concerned about esthetics of the oro-facial region. Gingival recession is considered as one of the major esthetic problems creating complex situations by compromising oral esthetics. This can be treated successfully by means of several mucogingival surgical procedures which can be used to accomplish satisfactory root coverage without any loss of interdental soft- and hard-tissue height. Grafts are also very useful in such scenarios. Our case reports the connective tissue graft technique used in the treatment of gingival recession. The objective of this case was to evaluate the efficacy of connective tissue graft (CTG) and also to mention the management of complications on the donor site.

KEYWORDS: *Hemorrhage, palatal artery, root coverage, subepithelial connective tissue graft*

INTRODUCTION

The aspiration for better aesthetics as well as subsequent demand for cosmetic dentistry has increased enormously in recent times. The cosmetic procedures have turned out to be a dynamic part of the periodontal treatment. The coverage of denuded roots is one of the most commonly used esthetic procedures in periodontal aspect. Marginal tissue recession is the displacement of gingival margin apical to the cemento-enamel junction leading to the root exposure. The causative factors implicated for the marginal tissue recession are tooth malpositioning, faulty toothbrushing technique, gingival inflammation, friction from the soft tissues, i.e., gingival ablation, abnormal attachment of frenum, and also iatrogenic factors.[1] These exposed surfaces of the root are susceptible to caries or may lead to abrasion or erosion of cementum. This leads to exposure of underlying dentinal surface that can be sensitive. The interproximal area recession compromises oral hygiene and results in improper plaque deposition. Therefore, various types of periodontal surgeries have been developed to solve this problem. The successful results for CTG procedures have led to the recognition of CTG as gold standard technique for soft-tissue graft procedures. The graft that can be used may be an epithelialized graft or subepithelial connective tissue graft (SCTG) which is harvested from the palatal mucosa. This technique uses a subepithelial connective tissue which is placed over the exposed

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root surface directly, also the mobilization of a mucosal flap laterally or coronally to cover the graft.[2] This is a unique case report which emphasizes on how to manage the repeated complication that can arise in the donor site while harvesting a connective tissue graft.[3]

CASE REPORT

A 45-year-old male patient reported to the department of periodontics with the chief complaint of receding gum in relation to 13, 14, and 15 [Figure 1]. He was a nonsmoker with no abusive oral habits and his systemic health history was noncontributory. His oral hygiene was poor and had generalized chronic severe periodontitis. The concerned teeth had no mobility with a recession of 5 mm with 13 and recession of 2 mm with 14 and 15 on the labial surface. Recession was well beyond the mucogingival junction (MGJ) with 13 with associated interdental hard- and soft-tissue loss. Therefore, it was Miller's Class III gingival recession with 13, whereas 14 and 15 recession was not beyond MGJ but had an associated interdental hard- and soft-tissue loss which comes under Miller's Class III gingival recession. According to the Nordland and Tarnow's classification, 13 had Grade II recession and 14 and 15 had Grade I recession.



[Figure 1](#)

Showing gingival recession in 13, 14, 15, and periodontal pocket



Presurgical protocol

Under local anesthesia (2% lignocaine with 1:80,000 adrenaline), thorough scaling and root planing was performed. After the completion of Phase I therapy, the patient was recalled regularly for maintenance therapy for a period of 3 months. A preoperative photograph was recorded. According to our pro forma, all the clinical parameters were recorded using University of North Carolina-15 probe such as recession width (W), recession height (H), and periodontal pocket depth, width of keratinized gingiva, and also the clinical attachment level. An

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versible hydrocolloid (alginate) impression was used to record the impression of maxillary arch and cast was poured by gypsum. The impression was recorded to fabricate Hawleys appliance to protect the palatal (donor site) wound area.

Investigations

The hematological investigations such as complete blood count, bleeding time, and clotting time were carried out. All the readings were within the normal limits.

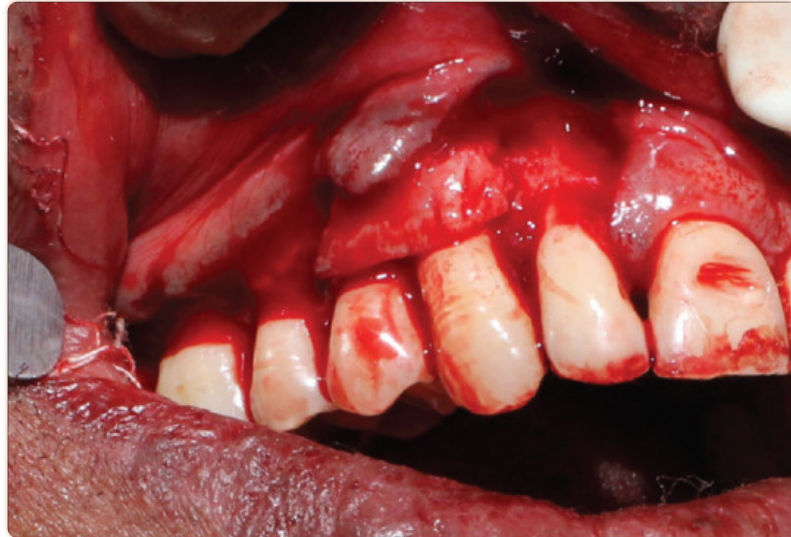
Surgical technique

Surgical technique used was the bilaminar SCTG which was placed underneath a full-thickness flap with respect to 13, 14, and 15. The surgery was performed under lignocaine with adrenaline (2% lignocaine with 1:80,000 adrenaline). The denuded area, i.e., 13, 14, and 15, was again thoroughly planed by using area-specific cures. The denuded root surface was made smooth and free from any remaining necrotic cementum, toxins, and other irregularities. However, no chemical root modifiers were used. A full-thickness flap was made using No. 11 blade, starting from the mesial of 12 to the mesial of 16. A horizontal incision 2 mm apical to the tip of the papilla was made followed by the two vertical incisions 1–2 mm apical to gingival margin of the adjoining teeth. The apical extension of the flap was made till mucobuccal fold to avoid perforations and compromised blood supply. At the base of the flap, a releasing incision of the periosteum was made to get an easy coronal advancement. Connective tissue graft was harvested from the right side of the palate. The first incision on the palate is made perpendicular to the long axis of the teeth extending from 12 to 16, approximately 2–3 mm apical to the gingival margin. The second incision was made parallel to the long axis of teeth, 1–2 mm apical to the first incision, depending on the thickness and mesiodistal length of the required graft. Hence, the connective tissue graft required for the denuded area was 7 mm in length and 15 mm in width. A small periosteal elevator was used to raise a full-thickness periosteal connective tissue graft. The CTG which was harvested was placed on the denuded root of 13, 14, and 15. It was stabilized with the 4–0 black silk sutures [Figure 2]. Furthermore, the overlying flap was pulled coronally to cover the graft up to the greatest possible length and sutured. After harvesting the graft, the donor site wound was sutured with 4-0 black silk suture material in a crossed horizontal suspension manner to approximate the wound on the palate. The donor palatal wound was covered by periodontal dressing (coe-pack) with the Hawleys appliance [Figure 3]. The postoperative instructions were given to the patient and a course of antibiotics 500 mg TID (amoxicillin) and analgesics (Zerodol SP) BD were prescribed for 5 days. The patient was also asked to gargle with 0.2% chlorhexidine mouthrinse 10 ml each twice a day for 15 days. The patient was recalled after 24 h for follow-up and clinical photographs were recorded [Figure 4]. After a follow-up period of 11 days, the patient experienced sudden spontaneous bleeding from palatal donor site which was continuous, though the patient was using Hawleys appliance regularly. Hence, the patient visited a private clinician for which pressure pack was given to patient, and therefore, the bleeding was stopped. After that, a detail case history was recorded in which the patient mentioned regarding the tablet which he borrowed from the medical shop for body ache which he had consumed 1 day before the bleeding episode. Intraoral clinical examination elicited no significant findings and palatal sutures were intact. The patient was called after 4 days for suture removal. However, again, prior suture removal, i.e., 14 day surgery, the patient experienced spontaneous bleeding from the same palatal site which was continuous and uncontrollable. Although after giving pressure pack and applying AbGel



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ing did not stop for which the patient was referred to an oral surgeon. By clinical examination, the cause of bleeding was the rupture of the palatal artery. A local anesthesia pressure pack was given at exact bleeding site for a period of 20–25 min. Hence, bleeding was under control and previously given sutures were removed and new arterial sutures were placed. The patient was kept under observation for the next 24 h and after 8 days, sutures were removed. After that, no bleeding episode was observed and the palatal site healed uneventfully.



[Figure 2](#)

Showing placement of the harvested CTG



[Figure 3](#)

Showing periodontal dressing with Hawley's appliance



[Figure 4](#)

Follow-up showing healing

DISCUSSION

Palate is the most common site for graft harvesting in periodontal surgery. The most important anatomic structure to be considered during harvesting graft from the palate is a greater palatine neurovascular bundle. This bundle contains the greater palatine artery, vein, and nerve, which travels in the pterygopalatine fossa, passes through the pterygopalatine canal, and exits through the greater palatine foramen. Usually, in 66.6% of cases, this foramen was found to be between second and third molars.[4,5] It has been reported that in Thai cadaveric specimens, the most frequent position of the greater palatine foramen was palatal to the second molar (i.e., 35.7%) and it is situated interproximal to the second and third molars in 35.7% of women and palatal to the second molar in 65% of men.[5] Critical evaluation and planning of the incision design at the donor site may help us to overcome such type of emergencies. Therefore, care should be taken during soft-tissue graft harvesting from the palatal vault to avoid injury to greater palatine neurovascular bundle. The possible complications when this bundle is encroached are bleeding and paresthesia. Hemorrhage during or after surgery is classified as (a) primary hemorrhage which occurs at the time of injury or operation, (b) reactionary hemorrhage is when there is displacement of the clot in a vessel or slipping of a ligature, and (c) secondary hemorrhage 8–14 days later when there is infection in the wound which can erode a small or large vessel. Secondary type of hemorrhage was observed in our case report as repeated bleeding episodes were seen within 14 days of time duration. Definitive strategy to control such type of bleeding is the application of direct pressure pack at the wound site and to grasp the vessel with a hemostat. If still bleeding persists, ligating the vessel is the best choice. The patient experienced the hemorrhagic episode twice. The first episode was after 10 days after surgery which occurred in the early morning hours around 5:00 am, whereas the second episode the patient experienced was 14th day after the surgery in the evening hours. The



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predictability of an emergency situation at odd times of the day landed the patient into an anxiety and also bought embarrassment to the operator. The primary reason for such type of complication may be variations in anatomic structures of the blood vessel which made the operator difficult to analyze at the time of harvesting procedure, especially while harvesting a larger length of graft for multiple denuded areas. Fu *et al.* performed a cadaver study which mentioned that the high palatal vault had a less distinct horizontal and vertical junction, which complicate the identification of the greater palatine neurovascular bundle.[6] Hence, the presence of high palatal vault in our case report can be the reason for complication of inability to locate the palatine vessels. Another suspected reason for such type of complication may be arteriovenous malformation (AVM) on the palate. These vascular malformations are a group of lesions formed by abnormal angiovascular structures having direct combination with arteries and veins and are gradual in onset and progression. In the oral cavity, AVM can be present at any site, they occur most commonly on buccal, gingival mucosa, and on the anterior two-third of the tongue and palate. It is believed that in the absence of residual AVM after surgery, the risk of future hemorrhage is reduced.[7] Due to this reason, there might not have been a further hemorrhagic episode in our case.

CONCLUSION

In the present case report, CTG used is a helpful and effective treatment modality for management of the recession defects affecting the teeth in the esthetic zones of the oral cavity. Moreover, this surgical technique has resulted in complete root coverage of the case. The intra- and postsurgical bleeding is a known complication after the palatal soft-tissue harvesting procedures. While harvesting a connective tissue graft, the repeated complications can arise in the donor site; however, the present report also mentions about the management skills to deal with such episodic bleeding pattern in the systemically healthy patient.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Conflicts of interest

There are no conflicts of interest.

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