

Two-Stage Surgical Procedure with Free Gingival Graft and Coronally Advanced Flap in Treatment of Recession Type 1: A Case Series

Tip 1 Dişeti Çekilmelerinin Tedavisinde Serbest Dişeti Grefti ve Koronale Pozisyonel Flep ile İki Aşamalı Cerrahi Prosedür: Vaka Serisi

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ABSTRACT: Gingival recession is a multifactorial problem happened due to various reasons and could be defined as the apical shift of the gingival margin. It can be easily diagnosed when root exposure occurred as a result of previous alveolar bone loss under the gingiva. This condition may have important esthetic, functional, and periodontal health implications. Esthetic concerns and dentin hypersensitivity caused by gingival recession are the main reasons that encourage the patient to seek periodontal treatment. The primary goal of any surgical approach for treating gingival recession defects will be complete root coverage (CRC) resulting in pain relief and prevention of further progression. One of the common surgical procedures for gingival recession treatment is periodontal mucogingival plastic surgery using free gingival graft and subepithelial connective tissue graft. In this case series, three cases presenting with "Cairo recession type 1" isolated gingival recession were treated by free gingival graft and coronally advanced flap without subepithelial connective tissue graft using two-stage surgical technique. The result after follow-up of our cases showed a significant increase in attached gingiva, long-term root coverage (RC) has been obtained and the complaints of patients were resolved.

Keywords: Free gingival graft, gingival recession, root coverage

ÖZET: Dişeti çekilmesi, çeşitli nedenlerle ortaya çıkan multifaktöriyel bir sorundur ve dişeti kenarının apikale yer değiştirmesiyle tanımlanan bir durumdur. Dişetin altında alveolar kemik kaybı sonucu kökün açığa çıkması ile kolaylıkla teşhis edilebilir. Bu durumun önemli estetik, fonksiyonel ve periodontal sağlık etkileri olabilir. Dişeti çekilmesi sonucu oluşan estetik kaygılar ve dentin hassasiyeti, hastayı periodontal tedavi aramaya sevk eden başlıca nedenlerdir. Dişeti çekilme defektlerini tedavi etmek için herhangi bir cerrahi yaklaşımın birincil amacı, ağrının giderilmesi ve daha fazla ilerlemenin önlenmesi ile sonuçlanan tam kök kapama olacaktır. Dişeti çekilmesi tedavisi için yaygın olarak kullanılan cerrahi prosedürlerden biri, serbest dişeti grefti ve subepitelyal bağ dokusu grefti kullanılarak yapılan periodontal mukogingival plastik cerrahidir. Bu vaka serisinde "Cairo çekilme tipi 1" izole dişeti çekilmesi ile başvuran üç olgu, iki aşamalı teknikte serbest dişeti grefti ve subepitelyal bağ doku grefti olmaksızın yapılan koronale pozisyonel flep ile tedavi edilmiştir. Vakamızın takipleri sonucunda yapışık dişetinde belirgin artış görülmüş, kök kapaması sağlanmış ve hastaların şikayetleri giderilmiştir.

Anahtar Kelimeler: Dişeti çekilmesi, kök kapama, serbest dişeti grefti

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INTRODUCTION

Gingival recession (GR) occurs only when gingival margin moves apically beyond CEJ and exposes the root surface, which might also result in impaired aesthetics, sensitivity and caries in the surface of root, pulp hyperemia and cervical abrasion(1). Gingival recession can make unpleasant appearance for patient so it can create major It is a source of worry for the individual, particularly when that happens in the anterior region of the mouth. Before surgery, there are number of aspects to keep in mind when selecting the method of achieving root covering. Which included the following: the severity of the recession as defined by Miller's classification, the extent of the attached gingiva (AG) located at the region of recession, location of the tooth in the arch of the mouth, as well as several patient features such as cigarettes and oral care(2,3).

Several surgical techniques can be used in treatment of gingival disease such as, free gingival graft (FGG), connective tissue graft (CTG), pedicled grafts (lateral or coronal), etc.(1). FGG was initially performed by Bjorn in 1963 (4). Advantages of using FGG has a high degree of stability and it is simple to use. In addition, FGG can be employed not just to cover denuded root surfaces but can also enhance the extent and thickness of the attached gingiva. However, FGG has several uncontrollable limitations including an incompatibility in esthetic shape as it has a pale color as well as a bulky appearance(5).

The most frequently utilized surgical procedures for treating gingival recession problems are pedicle flap surgical techniques (coronally or laterally advanced flaps). Coronally advanced flap (CAF) technique was firstly introduced by Norberg (6). CAF can be performed in combination with CTG or without it according to gingival biotype and amount of keratinized tissue. The indication to carry out a CAF without CTG is given if the

keratinized tissue height in recession region is more than 2 mm(7) and the gingival thickness is greater than 0.84 mm(8).

A primary goal of this case series study is to illustrate that the two-stage surgical treatment using FGG and CAF without CTG as a next step is suitable and successful in the management of Recession Type 1 (RT1)(9) and in the case of an absence of attached gingiva.

CASE REPORTS

Case 1

A 22-year-old female presented with a primary complaint of gingival recession in the upper right premolar area accompanied by esthetic problem. On examination, the patient had a RT1 (Miller's Class I) of 5 mm GR in #14 with a buccal attachment loss of 6 mm (Figure 1a) Approximately 2 mm of attached gingiva has been seen on the affected tooth. Accordingly, FGG technique was planned, in addition to obtaining signed informed permission from the patient.

To prepare the recipient bed, a horizontal incision was made at the level of mucogingival junction to split the alveolar mucosa from the keratinized tissue. The alveolar mucosa was separated first from periosteum in this procedure. The recipient bed was performed apical to recession not on root surface.

The FGG was obtained from the palate that extended from the middle of first premolar to the middle of first molar. The obtained graft was approximately 15 mm length, 4 mm diameter and 1 mm thickness. The graft was shaped and sutured on the recipient bed by absorbable polyglycolic acid 6-0 suture (Figure 1b). After 14 days, the sutures were removed. The healing was uneventful, and a wide attached gingiva was acquired which is ready for the second surgery (Figure 1c).

After 2 months, CAF was done. Firstly, partial thickness flap was raised starting 3 mm

from gingival margin of papilla and extended apically beyond mucogingival junction to release the flap sufficiently for easier pulling it coronally without tension to avoid expected relapse (Figure 1d). The keratinized tissue on papillae region was de epithelialized to reveal the connective tissue and prepare for flap adaptation. The raised flap is adapted coronally and sutured by absorbable polyglycolic acid 6-0 suture (Figure 1e). After 14 days, the sutures were removed, the recovery process was likewise uneventful, and CRC was achieved. After 12 months post-operatively, stable outcome (5 mm RC and 8 mm AG) was maintained (Figure 1f).



Figure 1. Intraoral photographs of surgical operations for first case

Case 2

A 28-year-old female reported with a complaint of gingival recession in the mandibular anterior tooth accompanied by hypersensitivity. After being examined, the patient was diagnosed with a RT1 (Miller's Class I) of 4 mm GR in #41 with a buccal attachment loss of 5 mm (Figure 2a). Approximately 1 mm of attached gingiva was observed on this area. Therefore, FGG operation was planned.

A horizontal incision was placed at the level of mucogingival junction to prepare the recipient bed. The alveolar mucosa was

separated from periosteum. The recipient surface was prepared apical to recession area.

The FGG was obtained from the palate extending from the mesial surface of first premolar to the mesial surface of first molar. The obtained graft was approximately 16 mm length, 4 mm width and 1 mm thickness. The graft was shaped and sutured on the recipient surface by absorbable polyglycolic acid 6-0 suture (Figure 2b). After 14 days, the sutures were removed, and the healing was uneventful. Wide attached gingiva was obtained for second CAF procedure (Figure 2c).

After 6 months, CAF was done. Partial thickness flap was raised. The incision started 3 mm from gingival margin of papilla and extended apically beyond mucogingival junction to release the flap sufficiently to pull it freely in the coronal direction without tension to avoid possible relapse (Figure 2d). The keratinized tissue on papillae region was de epithelialized to expose underlying connective tissue. The raised flap is adapted coronally and sutured by absorbable polyglycolic acid 6-0 suture (Figure 2e). After 14 days, the sutures were removed, and the healing also was uneventful without any problem and CRC was achieved.



Figure 2. Intraoral photographs of surgical operations for second case.

After 10 months post-operatively, stable outcome was observed, 4 mm RC and 6 mm AG was obtained (Figure 2f).

Case 3

A 24 year old female presented with a primary complaint of gingival recession in the mandibular anterior tooth accompanied by severe hypersensitivity. After being examined, the patient had a RT1 (Miller's Class II) of 3 mm GR in #41 with a buccal attachment loss of 4 mm (Figure 3a). Approximately no attached gingiva was observed on recession area. Therefore, FGG as a plastic surgical operation was planned.

A horizontal incision was placed at the level of mucogingival junction to prepare the recipient bed. The alveolar mucosa was separated from periosteum to prepare recipient bed apical to recession area.

The FGG was obtained from the palate extending from the mesial surface of second premolar to the middle of first molar. The obtained graft was approximately 11 mm length, 6 mm width and 1 mm thickness. The graft was shaped and sutured on the recipient surface using absorbable polyglycolic acid 6-0 suture (Figure 3b). After 14 days, the sutures were removed, and the healing was uneventful. The outcome of first surgery was wide attached gingiva required for second surgical operation (Figure 3c).

After 3 months, CAF operation was done. A split thickness flap was raised starting 3 mm from gingival margin of papilla and extended apically beyond mucogingival junction to release the flap sufficiently for easier handling and pulling it coronally without tension to avoid predictable relapse (Figure 3d). The keratinized tissue on papillae region was de-epithelialized by blade and scissors to get rid of epithelium for preparation of flap adaptation. The raised flap is adapted coronally and sutured using absorbable polyglycolic acid 6-0 suture (Figure 3e). After 14 days, the

sutures were removed, and the healing also was uneventful without any complaint from the patient. The buccal attachment loss recovered in relation to adjacent teeth but because the treated tooth was slightly extruded, the gingival margin still under cemento-enamel junction. At 4 months postoperatively, stable outcome was observed, 3 mm RC and 5 mm AG was obtained (Figure 3f).



Figure 3. Intraoral photographs of surgical operations for third case

DISCUSSION

In this case series, the treatment of gingival recession and absence of attached gingiva was performed with a two-stage surgical procedure. As a result of the treatment, long-term stable outcomes were obtained, there were no patient complaints and satisfactory aesthetic results were maintained in all 3 patients.

Gingival recession was formerly classified in most clinical studies depending on Miller's classification(10). Miller's classification system based on the mucogingival junction (MGJ), the presence or absence of keratinized gingiva, and the interdental hard and soft tissue loss. Generally, this classification showed to be quite beneficial, although it also showed some limitations over time(11). Recently, to overcome these limitations gingival recessions was classified into three different types according to a classification depends on

interdental clinical attachment level measurements, due to the fact that the interdental attachment's stability is a critical element in ultimate root coverage (9).

There are several methods documented in literatures for the management of gingival recession problems. The success rate of surgical management of gingival recession is differing according to Miller's classification, in Miller's class I and II (RT1) CRC can be obtained, in Miller's class III (RT2) CRC is questionable, but in case of Miller's class IV (RT3) CRC is not possible(12).

The two-stage surgical technique was initially introduced by Bernimoulin in 1975(13). Although this technique is considerably successful, it has some disadvantages. Re-establishment of blood supply in its new location is critical to the success of this procedure, which maintain graft's survival. Therefore in the early stages, it is essential to ensure collateral circulation from the connective tissue in recipient surface adjacent to the defect(14).

The FGG's aesthetic outcomes may not be satisfactory to patients because the donor tissue of FGG is often obtained from the palate, which has a lighter color than neighboring gingiva. Additionally, the patient will be subjected to two surgeries instead of one operation that may cause discomfort to the patient as well as this technique require long treatment period due to the time needed between the two surgeries(15). Aesthetically, in our first case, the gingival recession was in upper jaw, but the recession was above the smile line, and in the other two cases, the gingival recession was in the lower anterior region, so the patients did not face any esthetic problems.

Popova and Boyarova(15) reported a case similar to our cases. After eight months of follow-up, there was a substantial increase in the amount of AG, and RC was obtained for

#34-83% and for #44-91% in both areas respectively.

However, in a recent review, the authors reported that CAF + CTG looks to be the gold standard procedure for the management of single and multiple Miller class I/II gingival recession and long-term stability(16). Santamaria et al.(17) demonstrated that CAF + CTG had considerably favorable clinical results.

Some cases have contraindications of obtaining a CTG from palate because their disadvantages include limited availability, prolonged surgical time, in addition to increased patient morbidity. To overcome these problems, the patient can avoid undergoing donor site surgery by using various adjunctive biomaterials as alternatives for gingival recession management. The use of non-resorbable and resorbable membranes for treatment of gingival recession defects have been proposed instead of CTG application(18). Acellular dermal matrices (ACDM) from human and porcine origin and collagen matrices (CM) of porcine origin can be considered as alternatives for CTG(6).

Pini Prato et al.(18) have shown that the guided tissue regeneration (GTR) procedure has greater efficacy in cases with severe recession. Collagen membranes have the capacity to partially prevent epithelial apical migration and to support new connective tissue attachment formation when used on exposed root surface(19). Among the generations of resorbable collagen membranes the predictability of BioMend is excellent(20). Rath et al. (21) reported that there was a rise in the attached gingiva of 4 mm with CRC of 7 mm was observed after 6 months by using two-stage surgical procedure. They performed FGG in the first stage but in the second stage they applied BioMend GTR membrane with CAF.

CONCLUSION

This case series study conclude that the two-stage surgical procedure is highly predictable for root coverage and increase attached gingiva in the management of gingival recession RT1 (Miller's class I-II) and in the situation of attached gingiva deficiency. Although further studies can give more detailed information.

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