

Original article

Clinical Outcome of Free Gingival Grafting for Managing Localized Recession Type 1 (RTI): A Case Report

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Abstract

Localized gingival recession in the mandibular anterior region presents a clinical challenge, particularly in the presence of a shallow vestibule, high frenum attachment, and inadequate keratinized tissue. Achieving long-term soft tissue stability in such cases requires careful selection of the surgical approach. A 38-year-old female patient presented with a localized recession type I (RTI) affecting the mandibular left central incisor, associated with a thin gingival phenotype, high labial frenum attachment, and limited keratinized tissue. A free gingival graft (FGG) was selected to augment the keratinized tissue and deepen the vestibule rather than focusing solely on root coverage. Clinical evaluation demonstrated an increase in the width of keratinized tissue from 1 mm at baseline to 4 mm postoperatively. Gingival recession depth was reduced from 3 mm to 0.4 mm. These outcomes remained stable at one- and three-year follow-up examinations, with satisfactory graft integration and tissue maturation. Within the limitations of this case report, free gingival grafting proved to be a predictable and stable treatment option for managing localized RTI recession in the mandibular anterior region when the primary treatment goal is keratinized tissue augmentation and vestibular deepening.

Keywords. Gingival Recession, Transplants, Mandible, Follow-Up Studies, Gingiva.

Received: 03/05/26

Accepted: 02/07/26

Published: 12/07/26

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Introduction

The gingival recession is defined as apical migration of the marginal gingiva away from the cemento-enamel junction, leading to root exposure and hypersensitivity of the tooth [1]. Mucogingival surgery is defined as periodontal surgical procedures designed to correct defects in the morphology, position, or enhance the dental gingival junction, since defects in the morphology of the gingival and alveolar mucosa can accelerate the course of periodontal disease or interfere with the successful outcome of periodontal treatment [2]. Gingival recession is the displacement of the soft tissue margin apical to the cemento-enamel junction (CEJ) with exposure of the root surface. The distance between the CEJ and the gingival margin gives an estimation of the level of recession. There are many aetiological factors for recession, such as periodontal disease, accumulations, inflammation, aggressive tooth brushing, and dominant roots. It is also associated with functional problems such as dentinal. The indications for root coverage procedures in case of gingival recession include patients' requests for improved esthetics, function, and the reduction of dentine hypersensitivity caused by root exposure. In addition, these procedures increase the width and thickness of keratinized tissue, which contributes to better infection control [3,4].

Gingival recession is frequently observed in patients with a history of orthodontic treatment, particularly in the mandibular incisors. This may be linked to factors such as marginal labial frenum attachment, increased muscle tension, and a shallow vestibular depth [5]. Although gingival recession may be asymptomatic, it can cause pain from exposed dentin, esthetic concerns, and an increased risk of root caries. The management of gingival recession is based on a thorough assessment of the etiological factors and the degree of tissue involvement. The initial management should focus on correcting these factors. Surgical root coverage is indicated when esthetics is the primary concern and periodontal health is good [6,7]. In periodontal therapy, clinicians are routinely required to make treatment decisions regarding root coverage procedures for gingival recession defects. A substantial body of literature supports the effectiveness and reliability of the various surgical approaches available. The choice of technique is largely influenced by site-specific anatomical features – such as the depth and width of the recession, the amount of adjacent keratinized tissue, the dimensions of the interdental papillae, and the vestibular depth [6,8].

In addition, aesthetic demands, the anticipated clinical result, and the evidence-based predictability of each method must also be considered [9]. The necessity of a band of attached gingiva for maintaining optimal periodontal health is controversial. While some suggest that 2 mm of gingiva is essential for periodontal health [5], others have demonstrated that healthy gingiva can exist with minimal or no attached gingiva with proper oral hygiene [9]. Free gingival grafts are used for:

- Increasing the amount of keratinized tissue (more specifically, attached gingiva)
- Increasing the vestibular depth
- Increasing the volume of gingival tissues in edentulous spaces (preprosthetic procedures)

- Covering roots in areas of gingival recession [10].

While various techniques like tunnel procedures or connective tissue grafts are common, their predictability in the mandibular anterior region is often compromised by anatomical factors such as high frenal pull and shallow vestibules[3]. Therefore, this report aims to demonstrate the long-term stability (3 years) of the conventional Free Gingival Graft (FGG) as a reliable approach for such challenging clinical scenarios.

Case presentation

A 38-year-old female patient presented with a chief complaint of gingival recession in the lower left central incisor with high frenum attachment. She had no relevant medical or dental history. She also had no smoking or drug history. She had an improper brushing habit. She had orthodontic treatment. On clinical examination, the recession was manifested as a recession type I (RTI) located within the mandibular left central incisor (Figure 1). The recession exhibited dimensions of 3 mm in width and 3 mm in depth with a thin gingival thickness (thin phenotype), probing depth (PD) 1mm, clinical attachment loss (CAL) 4mm, width of keratinized tissue (WKT) 1 mm, and high frenum attachment (Figure 2).



Figure 1. Preoperative lateral view of the left central incisor showing recession type I (RTI) with 3mm recession width depth, thin gingival phenotype, and high labial frenum attachment.



Figure 2. Preoperative frontal view demonstrating inadequate width of keratinized gingiva and shallow vestibular depth in the mandibular anterior region.

The patient rinsed with a 0.12% chlorhexidine solution for one minute. Local anesthesia (2% lidocaine with 1:100,000 epinephrine) was administered. A split-thickness flap horizontal releasing incision was made between the mucogingival junction and the marginal tissue, continuing to release apically to position the flap. The root surface was prepared by using Gracey curettes and conditioned with 24% EDTA for two minutes, then washed with normal saline. From the donor site, which is the left side of the posterior hard palate in the region extending from the first premolar to the first molar of the maxilla, a 1.5 mm thick free gingival graft 4 mm x 8 mm was harvested from the palatal (Figure 3) according to the size of the recipient site, which was measured using a periodontal probe harvested free gingival graft complete from palatal site (Figure 4). The harvested free gingival graft extra orally cleans the edges and removes the adipose tissue (Figure 5). The donor site was sutured (Figure 6). Using non-absorbable 5-0 polypropylene Suture, the partially elevated flap was carefully placed in an apical direction and attached to the periosteum with horizontal parallel sutures (Figure 7). Subsequently, the graft was

placed with meticulous care onto the sturdy and resilient periosteal bed, orienting the connective tissue side towards the periosteum. Sutures with a polypropylene/monofilament, non-absorbable suture (reverse cutting) 5-0.



Figure 3. Donor site at the left side of the posterior hard palate (first premolar to first molar region) following split-thickness flap preparation for harvesting the free gingival graft.



Figure 4. Harvested a free gingival graft obtained from the palatal donor site, measuring approximately 4 mm x 8 mm



Figure 5. Extraoral preparation of the Harvested free gingival graft, showing removal of adipose tissue and trimming of graft margins



Figure 6. Palatal donor site after suturing, demonstrating primary wound closure.

Following the procedure, the patient adhered to a standard postoperative instruction, which included taking amoxicillin 500 mg three times a day for seven days, diclofenac 50 mg twice a day for four days, and using a 0.12% chlorhexidine digluconate mouthwash twice times daily for three weeks. During the initial month of the postoperative period, the patient was advised to brush the surgical area. The follow-up of the patient after 10 days from the day of surgery, the graft was completely healed on the recipient site (Figure 7). The sutures were removed after 10 days (Figure 8). A comprehensive follow-up of both the recipient and donor site was done. After one year (Figure 9), another follow-up was conducted to evaluate the prognosis and outcomes of the procedure after 3 years (Figure 10), in which a reduction in recession from 3 mm to 0.4 mm in height.



Figure 7. Recipient site 10 days postoperatively, showing complete graft integration prior to suture removal.



Figure 8. Recipient site after suture removal at 10 days postoperatively, demonstrating satisfactory healing and increased keratinized tissue.



Figure 9. One-year follow-up view showing stable keratinized tissue augmentation and significant reduction of gingival recession



Figure 10. Three-year follow-up view demonstrating long-term stability of the free gingival graft with near-complete root coverage and increased vestibular depth

Follow-up examinations were conducted at one year (Figure 9) and three years (Figure 10). A clinically significant reduction was noted.

Table 1. Clinical parameters recorded at baseline and during follow-up

Parameter	Baseline	10 days	1 year	3 years
Recession depth (mm)	3	-	0.5	0.4
Recession width (mm)	3	1	0.5	0.5
Width of keratinized tissue (mm)	1	3.5	5	7
Probing depth (mm)	1	1	1.5	1.5
Clinical attachment loss (mm)	4	2	2	1.9
Gingival phenotype	Thin	-	Thick	Thick
Vestibular depth	Shallow	Increased	Stable	Stable

Measurements were recorded using a standardized periodontal probe (UNC-15)

Discussion

The free gingival graft (FGG) remains an excellent treatment option for increasing the zone of attached gingiva and managing gingival recession, especially when complicated by inadequate vestibular depth. With appropriate case selection, this technique is highly predictable in achieving root coverage and tissue stability [9]. In the present case, a recession type I (RTI) was observed. It is essential to recognize that the etiology of gingival recession varies; while some types are associated with plaque accumulation, recessions involving mandibular incisors are most commonly linked to improper tooth brushing habits and anatomical factors [10]. Several recent investigations have examined various treatment approaches for recession defects in the mandibular anterior region. For instance, Sculean et al. reported that utilizing enamel matrix derivative combined with a connective tissue graft (CTG) through a modified coronally advanced tunnel technique resulted in a 0.5 mm increase in keratinized tissue (KT) height and 96.3% root coverage [11]. However, in this case, FGG was selected over the coronally advanced flap (CAF + CTG) or tunnel techniques. This decision was primarily driven by site-specific anatomical limitations, including a shallow vestibule, high labial frenum attachment, a thin gingival phenotype, and an inadequate width of KT. Under such conditions, coronally advanced or tunnel-based approaches may present limited

predictability and an increased risk of relapse due to muscle pull and insufficient apical tissue availability [12, 13]. Unlike CTG-based procedures, the primary objective here was not purely esthetic optimization but rather the augmentation of KT and vestibular deepening to establish a stable peri-dental environment. FGG remains a reliable technique for increasing the width of attached gingiva and reducing functional stresses, particularly in sites with minimal KT and high frenal tension [14, 15, 16]. The goals of treating gingival recession have evolved from merely preventing progression to achieving predictable root coverage for esthetic reasons [17]. While the overall aesthetic outcome, including color blend, is a significant concern in the maxillary aesthetic zone, the level of adjacent periodontal tissue and interdental papilla remains the main prerequisite for long-term wound healing and successful outcomes [14, 17]. Conventional FGG is highly effective in modifying a thin phenotype into a thick phenotype, ensuring long-term stability in challenging anatomical situations [19,20].

Conclusions

Free gingival grafting provides a predictable and stable long-term solution for managing localized RTI recessions in the mandibular anterior region. It is particularly effective when the clinical priority is to augment keratinized tissue and modify the mucogingival architecture to facilitate better plaque control.

Ethical Considerations

The present case report was conducted in accordance with the ethical principles outlined in the Declaration of Helsinki. Written informed consent was obtained from the patient for the surgical treatment and for the publication of clinical data and accompanying images. Patient anonymity was preserved, and no identifiable personal information was disclosed in this report.

Acknowledgements

We would like to thank the patient for her cooperation and consent to publish this case report.

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