

Creeping attachment post-gingival recession treatment using a vestibular incision subperiosteal tunneling access technique combined with a connective tissue graft

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ABSTRACT

Background: The exposed roots of teeth due to gingival recession can generate dentin hypersensitivity and esthetic problems because a patient feels that the teeth, especially the anterior teeth, look long. Recession in thin anterior gingiva often brings unsatisfactory treatment results, so mucogingival surgery, such as vestibular incision subperiosteal tunneling access (VISTA) with the addition of a connective tissue graft (CTG), can be chosen as an appropriate treatment technique. **Purpose:** This case report describes the creeping attachment phenomenon after treatment of anterior gingival recession with VISTA and CTG techniques. **Case:** A 28-year-old female patient came with Miller Class I gingival recession in thin anterior gingiva and malposition teeth, complaining about pain and esthetic problems. **Case management:** The patient was treated with a VISTA technique combined with CTG. The creeping attachment phenomenon seen at three months postoperatively obtained good root coverage so that the patient's complaints were resolved even though periodic control was needed to evaluate oral hygiene. **Conclusion:** VISTA and CTG techniques are appropriate for treating anterior mandibular gingival recession with minimal trauma and provide significant results.

Keywords: anterior gingiva; creeping attachment; CTG; medicine; VISTA

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INTRODUCTION

Gingival recession is clinically characterized by an apical shift of the gingival margin away from the cemento-enamel junction.¹ Pathologically, gingival recession can be caused by dental malposition, frenulum traction, orthodontic treatment, surgical procedures, and hard tooth brushing.^{2–4} This condition delivers dentin hypersensitivity, complicates the cleaning process, and interferes with esthetics.^{5,6}

Various treatment modalities can cover the root surface. Still, in patients with thin gingiva, it is necessary to choose the proper technique to reduce the risk of treatment failure.⁷ Thin gingiva is visible from its smooth and transparent surface. The bone beneath thin gingiva is likely to be fenestrated, dehydrated, and susceptible to resorption due to the lack of keratinized gingiva covering (<1.5 mm).^{8,9}

In patients with thin gingiva, recession treatment can be performed using the vestibular incision subperiosteal tunneling access (VISTA) technique to avoid tissue trauma due to gingival margin rupture. This technique is the tunneling modification with a vestibular access incision to maintain the blood supply and integrity of the interdental papillae.¹⁰

Gingival grafts with a connective tissue graft (CTG) were added to increase the thickness of keratinized gingiva with minimal trauma to the donor area while achieving better esthetics.¹¹ Mucogingival surgery has been carried out to cover the root surface. An interesting phenomenon that often occurs after mucogingival surgery is the coronal migration of the gingival margin, known as creeping attachment.^{12,13} This case report aimed to present the gingival creeping attachment after recession treatment with the VISTA technique combined with CTG.

CASE

A 28-year-old female patient came to the Periodontics Specialist Clinic, Dental and Oral Hospital, Universitas Gadjah Mada, Prof. Soedomo, Yogyakarta, Indonesia. The chief complaints were long teeth and pain when drinking cold water and brushing her teeth starting two months ago (April 2021). Clinical examination presented a labioversion #41 with a 4-mm recession height and a 3.5-mm recession width.

The patient had a Class II Division I Angle's Malocclusion with a 6-mm overjet, a 3.5-mm overbite, and a shallow vestibule. Thin gingiva with a keratinized gingival width of <1 mm was seen (Figure 1A). Radiographic examination showed a normal alveolar bone crest and furcation (Figure 1B). Based on the analysis, a Miller Class I gingival recession was diagnosed due to the accumulation of plaque and calculus, which was exacerbated by thin gingiva and malposition teeth.

CASE MANAGEMENT

The treatment plan was to remove the causative factor, followed by surgery. The patient was informed about the treatment procedures, risks, complications, and alternative treatments and asked to sign an informed consent. Dental health education and plaque control were performed at the first visit, followed by scaling, root planing, and polishing.

On the next visit, the gingival recession was treated with VISTA and CTG. The procedure was initiated with asepsis and anesthesia infiltration in the recipient area (#41, #31). A vertical incision was made in distal #41 from the mucogingival junction towards the incisal as high as a cementoenamel junction (Figure 2A), followed by forming a subperiosteal tunnel distal #31 to mobilize the gingival margin and facilitate repositioning toward the coronal (Figure 2B).¹⁰

The donor area was cleaned of deposits, and CTG was taken from the palate area of #14–16 (Figure 3A). A

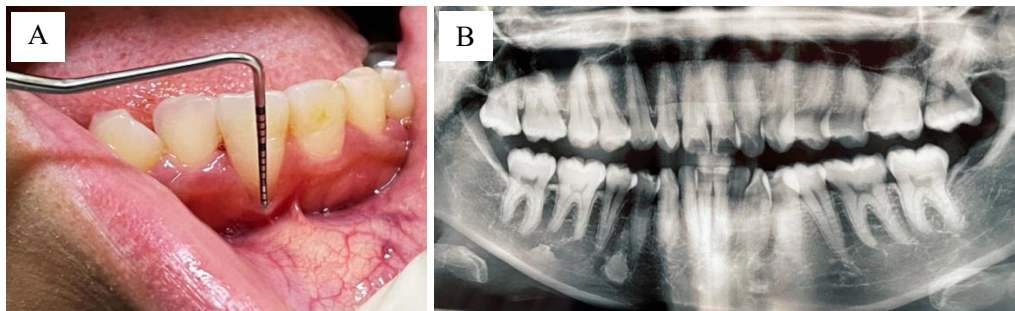


Figure 1. Gingival recession #41 with thin gingiva and malposition teeth: (A) Clinical, (B) Radiographic.

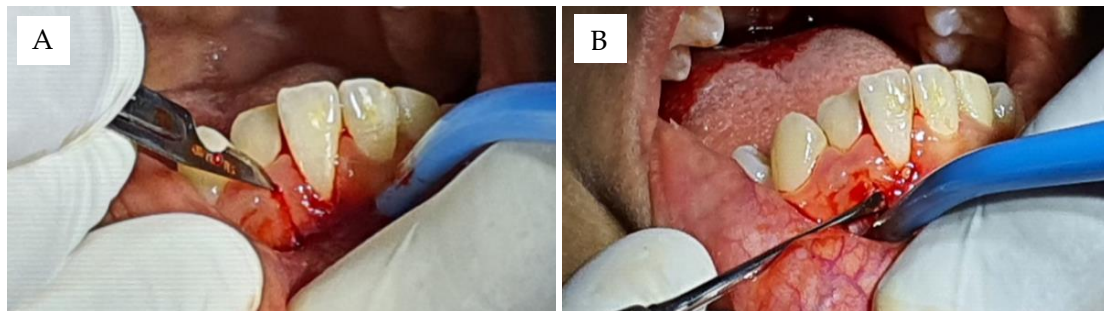


Figure 2. (A) Vertical incision distal #41, (B) Subperiosteal tunnel until distal #31.

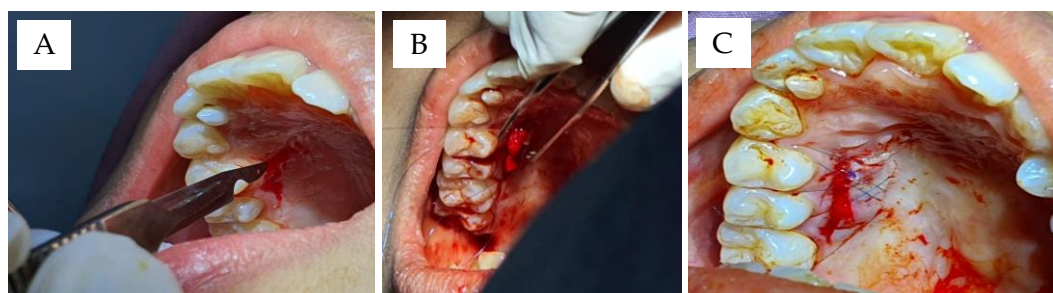


Figure 3. (A) Harvesting CTG of #14–16 palatal area, (B) Collagen membrane inserted, (C) Suturing donor area with blue nylon #5.0.

collagen membrane was inserted to prevent bleeding and maintain palatal volume (Figure 3B), then sutured with blue nylon #5.0 (Figure 3C).

A CTG was applied to the recipient area through the tunnel area of the vestibule (Figure 4A) and fixed using a #5.0 monophyte (Figure 4B). The flap was then pulled coronally, the incision margin was sutured, and the recipient area was covered with a periodontal dressing (Figure 4C). Post-surgical medication was amoxicillin 500 mg every eight hours for five days, mefenamic acid, and 0.2% chlorhexidine mouth rinse. The patient was advised to consume soft foods during recovery, avoid hot and spicy foods, and use the modified Stillman brushing method.¹⁴

The periodontal dressing was removed on day 7, and the sutures were removed on day 14. One month after surgery, the patient's pain complaints were reduced, the recipient and donor areas had healed, and the gingiva had a coral pink color (Figure 5A). Two months postoperatively, the pain disappeared, and the gingiva appeared thickened with a recession height of 3 mm (Figure 5B). The following month, the gingiva appeared thickened, was a coral pink color, and the recession height had reached 1 mm, meaning the patient's esthetics were achieved (Figure 5C).

DISCUSSION

The choice of surgical technique in gingival recession treatment needs to consider several factors, including the recession size, the thickness of the keratinized tissue around the recession, the width and height of the interdental soft tissue, the vestibule depth, and the frenulum involvement. Another factor to consider is esthetics and the patient's

expected outcome, with the minimum possible number of surgeries and intraoral surgical sites.¹⁵ Treatment of localized Miller Class I gingival recession on the mandibular incisors was performed using VISTA and CTG techniques. A vestibular access incision in the VISTA technique aims to reduce the risk of trauma to the thin gingival margin that often occurs in intrasulcular tunneling. In this technique, careful subperiosteal dissection should be performed to reduce the tension of the gingival margin in coronal movement by avoiding papillary reflection to maintain the integrity of interdental papillae.¹⁰

Using CTG by placing deepithelialized connective tissue into the recipient area will obtain perfect chromatic integration and optimal esthetic results. Another advantage is the availability of CTG blood supply from the recipient area and the flap that covers it, affecting the graft tissue's survival. It also minimizes a patient's discomfort because the CTG donor area will heal faster.¹⁶

Gingival wound healing after mucogingival surgery begins with a blood clotting process followed by a granulation phase characterized by a thickening of the gingiva and a maturation phase characterized by creeping attachment.¹⁷ Creeping attachment phenomenon refers to the coronal migration of the gingival margin after mucogingival surgery. The achievement of creeping attachment can be influenced by the recession's width, the graft's position on the root surface, the position of the teeth in the arch, the height of the interproximal bone, and the patient's oral hygiene. Several clinicians have reported that the creeping attachment phenomenon is best in the localized recession of the mandibular anterior teeth after mucogingival surgery with an autologous graft. This phenomenon can occur from the second month and continue until 12 months after or even longer.¹⁸



Figure 4. (A) Application of CTG through tunnel vestibule, (B) Suture with monophyte #5.0, (C) The recipient area is covered with a periodontal dressing.



Figure 5. (A) One-month follow-up, (B) Two-month follow-up, (C) Three-month follow-up.

In their study of two case reports, Soldatos et al.¹⁹ described that gingival recession treatment with the same gender and same age and similar cases showed creeping attachment at the two-month post-operative visit. Correspondingly, the 3-mm gingival growth in the patient with the localized recession of #41 that appeared three months postoperatively was also explained as a creeping attachment phenomenon. Gul et al.²⁰ described that the amount of creeping attachment gained in their study was proportional to the depth of recession defect.

The physiological mechanism that influences this phenomenon comes from the proliferation of periosteal connective tissue cells as a tissue response to the surgical process and the characteristics of the graft material that can bridge the root surface, proliferate, and mature.²⁰ CTG is a gingival graft procedure that has been widely used and is predictable in root coverage. However, CTG needs to be careful with the palate anatomy to minimize the risk of palatine artery trauma.²¹ The treatment of a single recession with CTG is presented in a study by Bautista et al.²² They handled the wide and deep single recession with a one-stage surgical procedure with CTG and started showing the result three months postoperatively.²²

The VISTA technique combined with CTG can provide good results in treating localized mandibular incisor recession. Creeping attachment in the treatment of gingival recession is unpredictable, but this phenomenon can promote esthetics and improve gingival quality. Research with more samples and a longer observation period is recommended to further study the creeping attachment phenomenon.

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