



(CASE REPORT)



Management of gingival recession with modified coronally advanced tunnel technique: Case report

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Abstract

Introduction: Gingival recession is characterized by apical migration of the gingival margin from the cemento-enamel junction (CEJ), with concomitant exposure of the root surface. Teeth with gingival recession often experience pain in response to thermal, chemical, and tactile stimuli to the exposed dentine. This is known as dentin hypersensitivity. Dentin hypersensitivity is characterized by exposed dentinal tubules most often due to gingival recession and loss of cementum through erosion, abrasion, or other factors.

Patient's main concerns: A-20-years-old male patient visited to Periodontics Clinic Dental Hospital Airlangga University with the main complaint of dentin hypersensitivity in the upper right second premolar. The Systemic is good, had no history of allergies and did not smoke.

Important clinical findings: The recession measured 1 mm facially on the maxillary right second premolar. Case and Management: Prior to surgery, scaling and root planing was performed to eliminate debris and calculus. Two weeks afterward, modified coronally advanced tunnel technique was done for dentin hypersensitivity treatment. One month evaluation, dentin hypersensitivity disappeared.

Conclusion: Modified coronally advanced tunnel technique was the appropriate treatment to treat dentin hypersensitivity. This technique achieved healthy keratinized tissue and coverage of the root surface.

Keywords: Dentin Hypersensitivity; Gingival Recession; Coronally Advanced Flap; Modified Coronally Advanced Tunnel Technique; Acellular Dermal Matrix

1. Introduction

Periodontal plastic surgery is defined as the surgical procedures performed to correct or eliminate anatomic, developmental or traumatic deformities of the gingiva or alveolar mucosa. Gingival recession is defined as the displacement of the gingival margin apical to the cemento-enamel junction (CEJ) with the loss of periodontal connective tissue fibers along with root cementum and alveolar bone [1].

The etiology of gingival recession is multifactorial like excessive or inadequate tooth brushing, destructive periodontal disease, tooth malpositioning, alveolar bone dehiscence, thin and delicate marginal tissue root surface, high muscle attachment and frenal pull, occlusal trauma and other iatrogenic factor [2].

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The exposure of the root surface by gingival recession is frequently associated with dentine hypersensitivity, root caries, non-carious cervical lesions (NCCLs), compromised plaque control, and unaesthetic appearance. Moreover, untreated gingival recession has a tendency for further apical displacement over time in spite of good patient motivation [3]. One of the consequences of gingival recession is dentine hypersensitivity. Dentin hypersensitivity is dental pain which is sharp in nature and persist for short duration, a comes from exposed dentin surfaces in response to stimuli, mainly thermal, tactile, osmotic, chemical or electrical [4].

From the explanation above, gingival recession can cause several complaints in patients such as dentin hypersensitivity, it has been experienced by the patient from this case report. This case report aims to explain the management of gingival recession with modified coronally advanced tunnel technique.

2. History and Clinical Findings

A 20-years-old male patient visited to Periodontics Clinic Dental Hospital Airlangga University with the main complaint of dentin hypersensitivity in the upper right second premolar. (Fig.1). He started noticing sensitivity in the same area in the past 3 months. The systemic is good, had no history of allergies and did not smoke. From clinical examination, there was gingival recession of 1 mm facially on the maxillary right second premolar. This case is included in the Miller Class I classification. The amount of keratinized gingiva was measured using a periodontal probe by identifying the mucogingival junction and measuring the distance from the mucogingival junction to the gingival margin. The diagnosis of this case is Mucogingival Deformities and the prognosis is good.

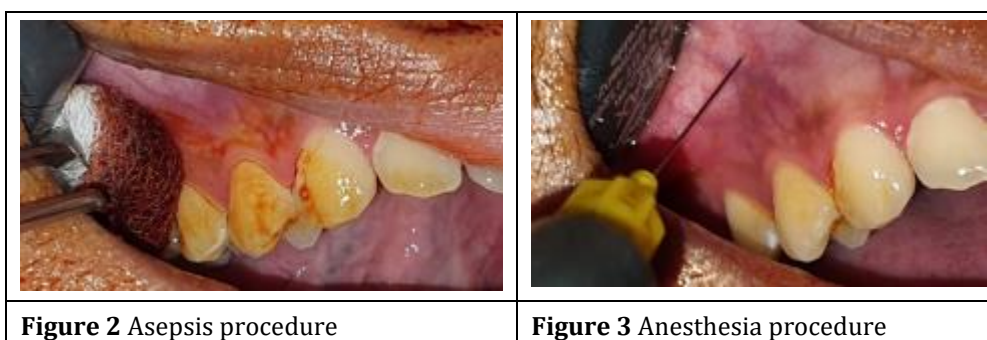


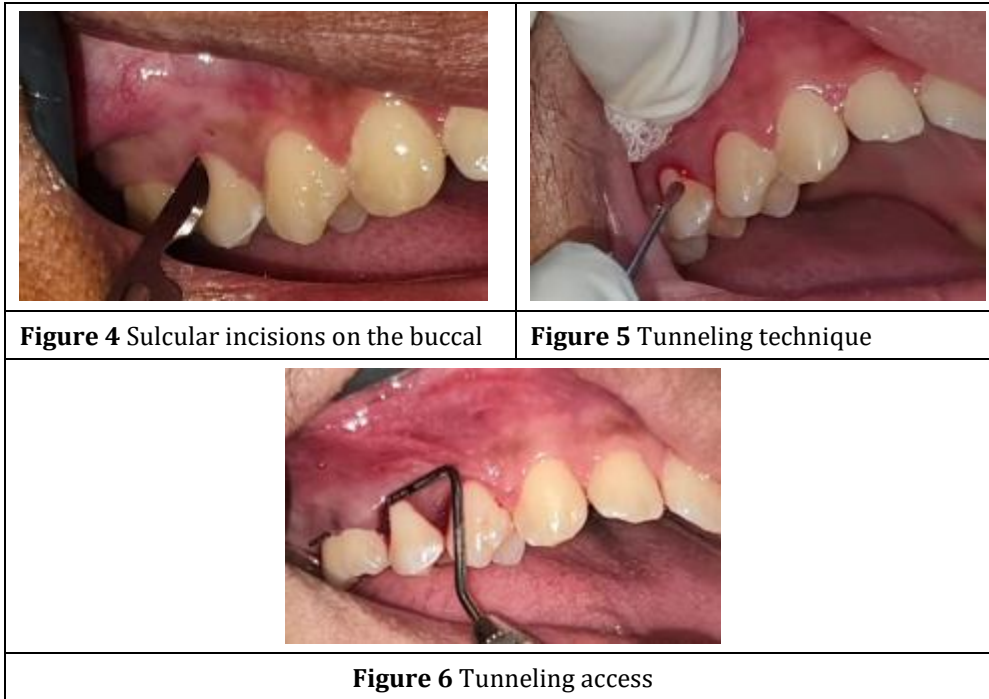
Figure 1 Pre-operative image

2.1. Case and Management

The patient was informed about the procedure and signed a consent form. Before the surgery, oral hygiene instruction was given, scaling and root planning was performed. One week after phase I therapy, the patient came for control and was performed modified coronally advanced tunnel technique.

Asepsis in the work area, then anesthesia procedure is performed (Fig.2,3). After the patient feels numb, sulcular incisions on the buccal were performed with microblade (Fig.4,5). Starting with the full thickness dissection on attached gingiva then it was extended with the partial thickness dissection. It was extended until continuity to mucosa was established between the recession sites without raising the papillae. TKN knife was used to separate the connective tissue and periosteum. After the tissue has been divided, a probe is used to verify tunneling access (Fig.6).





On the buccal of tooth 15, the Surederm membrane was applied and sutured using the coronally positioned suture technique, and fixed horizontally using a composite (composite button) (Fig.7,8). Finally, the patient is given post-operative instructions, medication and scheduled to control one week after surgery.

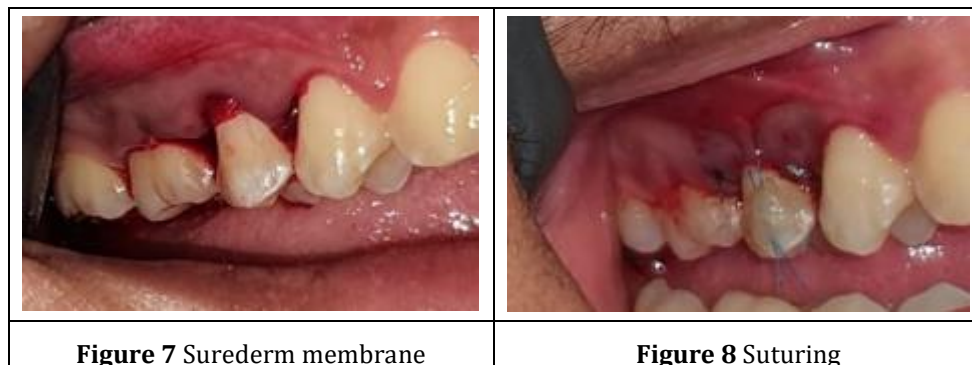


Figure 9 The first post-operative control, 1 week after surgery.

In the first post-operative control, 1 week after surgery, the patient had stomatitis in the suturing area and the surgery area is still in the healing process (Fig 9). Saline irrigation was performed and prescription drugs were given to cure stomatitis. In the second post-operative control, 2 weeks after surgery, the patient had no complaints and still in the

healing process of the surgery area (Fig 10). Saline irrigation is performed, then releasing sutures in the surgery area. And instructions were given to maintain oral hygiene.



Figure 10 The second post-operative control, 2 weeks after surgery.

3. Discussion

Treatment planning for a gingival recession is based on the etiology and severity of the recession. Before treatment of the gingival recession, the etiological factors of the recession must be treated first. Gingival recession management can be done surgically or non-surgical. Handling a recession with a surgical procedure in addition to aiming to cover the recession area also serves to reduce hypersensitivity, prevent a more severe recession and for esthetic correction especially recession in the anterior area. Surgical treatment success is related to the selection of surgical techniques, procedures during surgery, suturing techniques, and postoperative care [5].

Over the last decades, numerous surgical procedures have been proposed to treat gingival recessions including pedicle flaps, coronally advanced flaps (CAF) or tunnelling techniques alone or in combination with subepithelial connective tissue grafts (CTG), guided tissue regeneration (GTR), enamel matrix derivative (EMD), hyaluronic acid (HA), platelet concentrates (PRF) and acellular dermal matrix (ADM) [6].

Modified coronally advanced tunnel technique is one of the techniques to treat gingival recession. The tunnel can be prepared in a full-thickness or split-thickness manner depending on the soft tissue dimensions. In most cases, the tissues are thin, and therefore, a full-thickness flap design is the safer approach to avoid perforations and ruptures. Modified coronally advanced tunnel technique can be used in single and multiple gingival recession [7,8].

The results from the present study indicate that both surgical interventions (tunnel technique and coronally advanced flap) were of similar efficacy in terms of root coverage, early wound healing, and esthetic outcomes at 3 and 6 months. However, tunnelling technique demonstrated a significantly higher increase in keratinized tissue and a shorter surgery duration[9].

Modified coronally advanced tunnel technique was used in this case with the material of acellular dermal matrix. Surederm is an ideal material for tissue augmentation material because of its great predictability and outstanding biocompatibility with host tissues. Surederm serves as a scaffold in the process of regeneration of periodontal tissue. It contains a lot of collagen, especially type I and type III collagen which is needed in the process of regeneration of periodontal tissue [10,11].

4. Conclusion

In this case, it can be concluded that modified coronally advanced tunnel technique was the appropriate treatment to treat dentin hypersensitivity. This technique achieved healthy keratinized tissue and coverage of the root surface.

Compliance with ethical standards

Disclosure of conflict of interest

No conflict of interest to be disclosed.

Statement of informed consent

Informed consent was obtained from all individual participants included in the study.

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