International Journal of Recent Research in Arts and Sciences ISSN: 1857-8128

MIT UNIVERZITET SKOPJE

JOURNAL

International Journal of Recent Research in Arts and Sciences

Volume 20

Skopje, Republic of North Macedonia

March, 2025

MIT UNIVERSITY
SKOPJE

International Journal of Recent Research in Arts and Sciences

ISSN: 1857-8128

MIT UNIVERSITY
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ISSN: 1857-8128

CONTENTS

Natural and Technical-technological Sciences

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International Journal of Recent Research in Arts and Sciences

ISSN: 1857-8128

Social Sciences and Humanities

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ISSN: 1857-8128

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International Journal of Recent Research in Arts and Sciences

ISSN: 1857-8128

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USE OF FREE GINGIVIAL GRAFT TO RESOLVE GINGIVAL RECESSION OF LOWER INCISORS
(A Case Report)

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Abstract

Introduction: The free gingival graft is the oldest surgical technique used to cover exposed root surfaces and obtain a sufficient size of the attachment gingiva. Its use is often on lower front teeth where there is a lack of attachment gingiva and deepening of the fundus is necessary.

Objective: The aim of this paper is to present a case of the use of a free gingival graft

Materials and methods: In a 32-year-old patient, the lower central incisor with a Miller class I recession was exposed. The recession is of traumatic etiology and an orthodontic fixed prosthesis has already been planned and placed in the upper jaw. A coronally positioned flap was made, the papillae were de-epithelialized, the root surfaces were treated with 24% EDTA and the free gingival graft was placed, which was positioned using Vicryl absorbable suture with 5 zeros.

Results: Conclusion: Free tissue graft is most often used in cases where there is recession with minimal width of the attached gingiva, which is an important factor for success in periodontal surgery. In Miller class I, the coverage of the exposed root surfaces is 100%

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International Journal of Recent Research in Arts and Sciences

ISSN: 1857-8128

successful, unlike Miller class III where the success is reduced to 70% because we have interdental bone resorption present.

Key words: *recession, free gingival graft, coronally positioned flap, keratinized gingiva.*

Introduction

The basic and main role of the periodontal tissue is to secure the tooth in the alveolus, which is why it is of great importance in maintaining the function of the masticatory apparatus. Developmentally and embryological monitored, it has been proven that the beginnings of the periodontal tissue are parallel to the formation of the teeth. In certain conditions, conservative therapy is quite sufficient to achieve an adequate effect, but sometimes conservative therapy is insufficient, and the only and true therapy is surgical treatment. Relying on the fact that regeneration cannot be achieved with conventionally applied therapy, the application of certain techniques to achieve the goals of each therapist is completely justified.

Gingival inflammation that is not treated at all or is inadequately treated progresses further and affects the remaining structures of the periodontium and causes damage to the periodontium, which is the most common cause of recession. Reversible inflammation of the gingiva progresses to destruction of the periodontal ligament, resorption of cementum and destruction of the alveolar bone, which is essentially a response to the dental plaque tissue that has accumulated on the teeth and in its immediate surroundings.

Under the influence of plaque, collagen disintegration occurs and the alveolar bone is degraded, while the epithelium of the attached gingiva passes into the epithelium of the pocket that proliferates apically and laterally. This is how the periodontal pocket is formed, which is a pathognomonic sign of periodontal disease, and at the same time a predilection site and a kind of reservoir of opportunistic pathogenic bacteria that potentiate inflammation and promote the progression of the disease. The process progresses, and in inappropriate circumstances ends with tooth loss. For this reason, continuous and timely therapy is the basic procedure that should be undertaken when it comes to an unwanted progressive condition.

Essentially, periodontal therapy aims to regenerate periodontal tissues, restoring their initial state and function, i.e. establishing normal and physiological activity in terms of function and

aesthetics. Otherwise, recessions are not treated as a disease, but rather as an apical withdrawal of the marginal gingiva from the enamel-cementum boundary.

Literature Review

The etiology of gingival recession is multifactorial and the factors that cause the occurrence of recessions are most often heterogeneous and diverse and according to Zucchelli are divided into the following three groups: anatomical, physiological and pathological.

Anatomical factors associated with gingival recession include the existence of fenestration and dehiscence of the alveolar bone, abnormal position of the tooth in the dental arch, inappropriate eruption path of the tooth, as well as the shape of the tooth that has recession3.

Physiological factors include orthodontic movements of the teeth outside the alveolar arch, which leads to the formation of dehiscence [1,2] and which act as a "locus minoris resistentiae" for the development of recession [3,4].

Pathological factors include: improper tooth brushing caused by various factors of potentially confounding variables such as: pressure, time, force and the cleaning agent used [5,6], then the use of dental floss,10,11,12 perioral and intraoral piercings13,14, direct trauma due to malocclusion [7], partial restorative therapy [8,9], diseases such as herpes simplex virus [10], as well as the presence of dental plaque [11].

From an etiological aspect, mucogingival anomalies according to Carranza [12] are classified as: developmental, congenital and acquired.

Developmental anomalies are associated with the period of change of milk teeth with permanent ones and these problems occur due to the rudiments of permanent teeth that occupy a more vestibular position in relation to milk teeth, which reduces the width of the keratinized gingiva, which is crucial for the occurrence of recessions.

Congenital gingival anomalies are conditioned by the genotypic information recorded in the DNA of each individual.

Acquired anomalies occur as a result of damage to the gingiva for various reasons.

A prospective study in India, which included 710 patients [13], concluded that a higher percentage of recession occurs in males than in females. Recession is most common in the lower

frontal incisors and occurs most frequently in Miller I classification, while according to the etiological cause, dental plaque takes the leading role, and in second place is incorrect brushing technique. In another study, the authors reviewed the epidemiological causes of recession, as well as its prevalence in certain groups of patients: recession caused by trauma, the relationship of recession with gender, individuals with incorrect occlusion of teeth, inflammation as a cause of recession, and tobacco use [14].

The influence of tobacco, in addition to the occurrence of recessions as one of the etiological factors, according to Anisha P. Yadav, also significantly affects the postoperative course of recessions and achieving the best possible results [15].

The results showed that 88% of people aged 65 and older have the most teeth with recession. A second important point in this research shows that 50% of people aged 18 to 64 years present with one or more places with recession, which means that the presence and degree of gingival recession increases with age.

The group of 50% of the respondents who have one or more teeth with recession have exposure of the tooth neck in the size of 1 mm or more. Monitoring of recession was carried out in patients with good and poor oral hygiene. This confirms that recession is multifactorial. One type of recession is associated with anatomical factors and another type with physiological or pathological factors. However, it has been observed that it is more often found on the buccal surfaces of teeth than on the rest.

In fact, gingival recession occurs with the apical retraction of the marginal gingiva, which reduces the vestibular depth. Therefore, among periodontists, it is said that gingival recession is not a disease, but rather it is defined as the apical dislocation of the marginal gingiva towards the enamel-cement junction [16], a condition that is primarily determined by morphology and structure, poor oral hygiene (rough tooth brushing) and possible functional overload (traumatic occlusion). In such and similar conditions, exposed root surfaces do not meet the needs of patients primarily from an aesthetic point of view.

With the retraction of the marginal gingiva towards the mobile, normal maintenance of oral hygiene is difficult, which is why secondary inflammation occurs. The progression of the process causes disruption of the supporting apparatus of the teeth, which later leads to their loss.

According to other authors, the width of the keratinized gingiva is one of the important factors for the occurrence of recession. The width of the keratinized gingiva is measured from the mucogingival line to the marginal gingiva and is considered one of the key factors in preventing natural teeth from developing recession [17, 18]. Their studies suggest that the prognosis of gingival recession after treatment, regardless of surgical technique, is better if the width of the keratinized tissue around the natural teeth is greater.

Anton Sculean and Edward Allen [19], examining the etiological factors for the occurrence of recession, in addition to the width of the keratinized gingiva, the gingival biotype, and poor brushing, in their study treated buccal gingival recessions in teeth after orthodontic treatment. They determined in their research that the recession of orthodontic treated teeth affects the buccal surfaces of the mandibular incisors the most, thus providing sufficient evidence that one of the etiological factors in the occurrence of recessions is also orthodontic treatments in patients. The resolution of these conditions is possible in several ways, of which the primacy certainly belongs to surgical techniques. The free gingival graft can be obtained from the palatine parts of the patient or from the tuberositas maxillae. Jung [20] describes in great detail the taking of a graft from the palatal region, which can be full-thickness with epithelium, connective tissue and periosteum, the so-called free gingival graft - FGG, or as a subepithelial without epithelium and without periosteum which is known in the literature as a submucosal gingival graft - CTG. The subepithelial gingival graft which is completely free of epithelium has recessive nutrition on both sides and thus creates a larger and more predictable coverage of the tooth root [21].

A Case report: In a 32-year-old female patient, the lower central incisor was exposed with a Miller class I recession and a thin gingival biotype. The recession was of traumatic etiology with a size of 2.5 mm, a periodontal pocket of 1 mm and the presence of keratinized gingiva of 3.5 mm. In the meantime, an orthodontic fixed prosthesis was planned and placed in the upper jaw. Plexus anesthesia was given for the inferior alveolar nerve with 2% anesthetic Scandonest, a coronally positioned flap was made and prepared cascade-wise with the split-full-split technique, the papillae were de-epithelialized, and the root surfaces were treated with 24% EDTA. After plexus anesthesia was administered to the palatine nerve, a 1.5 mm thick free gingival graft was prepared and taken, which was positioned using 5-zero Vicryl absorbable

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International Journal of Recent Research in Arts and Sciences

ISSN: 1857-8128

suture at the previously prepared recipient site, and a stabilization suture was placed with non-absorbable suture.

Figure 1 Recession of the lower central incisor

Figure 2 Taking a free gingival graft from the Palatum durum

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ISSN: 1857-8128

Figure 3 Positioning the free gingival graft on the prepared recipient site with Vicryl absorbable suture with 5 zeros

Figure 4 Stabilization suture placed at the grafted site (one day postoperatively)

Figure 5 One year stable results postoperatively

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International Journal of Recent Research in Arts and Sciences

ISSN: 1857-8128

Results and discussion

The clinical results in our patient who was followed up for 1 year postoperatively showed a decrease in the periodontal pocket depth to 0 mm, a decrease in tooth recession also to 0 mm, as well as an increase in keratinized tissue from 3.5 to 5.5 mm, which is important for maintaining a healthy periodontal tissue of the tooth. The periodontal pocket depth decreases rapidly until the 6th month, and stagnation is observed in the 9th and 12th months, which means that tissue stabilization occurs. Nabers [22] and Matter [23] in their surgical cases for resolving recession came to the conclusion that a thin gingival graft integrates more easily because it revascularizes better than a graft with a thicker thickness, because they had gingival relapse after a few months in those places where the graft was thicker. This fact in turn leads us to the conclusion that the success in resolving recessions depends to a large extent on the thickness of the graft, which should range between 1-1.5 mm. According to Tenenbaum and Marques [24], an inadequate range of keratinized tissue around the teeth increases the formation of plaque, which in itself is a risk for inflammation of the periodontal tissue complex and its loss due to reduced mucosal resistance. At the same time, the thin biotype of the gingiva and the predisposition of the lower incisors, which are most often affected by recession, are primary in its occurrence [25], but their prognosis after treatment, regardless of the surgical technique, is better if it also increases the width of the keratinized tissue around the natural teeth, as in our case.

Conclusion

Free tissue graft is most often used in cases where there is recession with minimal width of the attached gingiva, which is an important factor for success in periodontal surgery. In Miller class I and Miller class II, the coverage of the exposed root surfaces is 100% successful, unlike Miller class III where the success is reduced to 70% because we have interdental bone resorption present. In our case, we have stable results 1 year postoperatively.

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