

Surgical Coverage of Gingival Recession: A Case Report

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Abstract:

Gingival recession affects many young adults, shown by the fact that these patients often report pain and aesthetic discomfort. Gingival recession can have several causes, such as mechanical factors, inflammatory lesions, and destructive periodontal disease. Gingival recession can be treated through a several surgical techniques, according to the classification of this condition. This report is a clinical case of root coverage to correct gingival recession at an upper left first premolar (tooth #24 [FDI notation]) through periodontal plastic surgery based on the technique of autogenous connective tissue graft on a male patient, 27 years old, which was successfully performed in an outpatient setting under local anesthesia.

Keywords: *Gingival recession, Root coating, Graft.*

Introduction

Gingival recession, also known as receding gums, is the displacement of the apical gingival margin in relation to the cemento-enamel junction, with exposure of the root surface.¹ Evidence suggests that the predominant cause for localized retraction is trauma from brushing in young individuals, whereas periodontal disease may be the primary cause in adults.¹ The retraction can cause dissatisfaction and discomfort to the patient, due to the unpleasant aesthetic appearance and dentin hypersensitivity in some cases.²

Exposure of the root structure, and consequently of the dentinal tubules, is responsible for a reduction in the patient's pain threshold, promoting dentin hypersensitivity. Thermal, chemical and tactile stimuli can therefore cause discomfort to the patient, reason enough for them to seek professional help.³

In populations that maintain a high standard of oral hygiene, attachment loss and gingival recession are predominantly found on the buccal surfaces, and are often associated with wedge-shaped defects in the cervical area of one or more teeth, with this defect occurring more frequently in single-rooted teeth than in molars.¹

Dentin hypersensitivity is defined as an exacerbated sensitivity of vital dentin exposed to thermal, chemical and tactile stimuli.^{1,2} In the case of receding gums, exposure of the dentinal tubules is responsible for a reduction in the patient's pain threshold as well, which is also sufficient reason for them to seek professional help.³

Gingival recession can be corrected through periodontal plastic surgery, which is defined as a surgical procedure performed to correct or eliminate anatomical, developmental or traumatic deformities of the gingiva or alveolar mucosa. It can be suggested that there are at least three different causes of recession of the marginal gingival tissue.^{1,3,4} Coronal gingival graft at the retraction site, known as root coverage, is a graft (whether free or pedicled) that is placed covering the bare root surface, which can be used to correct gingival recession. Coronal positioning of the inserted gingiva improves oral hygiene procedures and can correct an aesthetic problem.⁴

In addition to the concern with covering the exposed root, there is also an interest in increasing the height and thickness of the keratinized tissue. Hence, techniques involving the use of subepithelial connective tissue grafts can associate coronary tissue positioning with the modification of the height and thickness of the keratinized tissue.

As a rule of thumb, the association of subepithelial connective tissue graft from the palate allows for higher rates of root coverage, thus allowing for better results.⁴

This paper is a clinical case report in which the patient presented esthetic discomfort and dentin hypersensitivity due to gingival recession, whereby the treatment of root coverage with autogenous graft was chosen as an alternative to aesthetic and functional rehabilitation of the keratinized gingival tissue. This is justified due to the need for knowledge of possibilities of aesthetic and functional treatments for the correction of gingival retraction, since this negatively interferes with the appearance of the patient's smile and the functioning of their periodontal protection.

Case Report

Patient S.M.C., male, 27 years old, of Asian descent, originally from Manaus, Amazonas, appeared for a dental appointment at the UEA Dental Polyclinic (POUEA), complaining of "pain when eating hot or cold food". In this consultation, an intra-oral examination was performed and the presence of a thin periodontal biotype and a Miller's class I recession in the upper left first premolar (tooth #24 in FDI notation) (Figure 1) and a lesion in the cervical element of tooth #24 was verified. (Figure 2).



Figure 1: Miller's Class I gingival recession in the upper right canine (#24).



Figure 2: Lesion measuring 1 mm deep in the cervical margin of tooth #24.

Periodontal indices such as visible plaque index (VPI), gingival bleeding index (GBI), and probing depth (PD) were used during the intraoral physical examination. The patient was diagnosed with localized gingivitis. During the intra-oral examination, the presence of a 23% VPI and 29% GBI of the examined sites demonstrates periodontal indices compatible with good health, also in the intra-oral clinical examination.

Treatment prior to surgical therapy was planned in four sessions with supragingival scaling, class V restoration in composite resin, and guidance on proper oral hygiene. In light of the diagnosis of this case, the proposed treatment was to perform periodontal plastic surgery based on the coronally-positioned flap technique, associated with connective tissue graft, in one session. First, the region was anesthetized using the anesthetic technique of blocking the greater palatine nerve using lidocaine with epinephrine 1:100,000. After certifying anesthesia of the regions to be incised, slightly divergent horizontal mucogingival incisions were made in the distal and mesial area of tooth #24 (Figure 3), with incisions between the mesial and distal papillae using a scalpel handle and a #15 scalpel blade, so that the gingival tissue was carefully lifted apically (Figure 4).



Figure 3: Intragingival vertical incision



Figure 4: Gingival tissue lifting



Figure 5: Connective tissue graft from the palate.

The donor site was the palate, from which a graft was removed using the double incision technique, initiated by two parallel incisions preserving the epithelium, using the same #15 scalpel blade (Figure 5). Next, the graft was taken to the recipient site then tested and adapted without tension on the root, thus totally covering the recession area. Continuous crisscross sutures were then performed at the region of the donor site (Figure 6).



Figure 6: Surgical synthesis of the donor site in continuous crisscross sutures.



Figure 7: Graft immobilization at recipient site.

The graft was then immobilized in the region of the recipient site. The graft was secured to the underlying interproximal connective tissue with lateral sutures (Figure 7). The flap adjacent to the graft was then replaced, pulling it coronally against the tooth, covering the graft as much as possible. Lastly, the incisions and the interproximal region were sutured using simple stitches from the mesial region of tooth #23 to the mesial region of tooth #25.

The postoperative period was monitored at one week, 15 days, and 40 days after the surgery (Figure 8 and 9), with the aim of verifying the result on an aesthetic basis. The patient reported symptoms of slight pain and, upon clinical examination, the surgical wound healing process was found to have occurred in a favorable manner, free from infection.



Figure 8: Healing of the recipient site after 15 days.



Figure 9: Healing of the donor site after 15 days.

Discussion

Periodontal recession is a common condition among the general population, with a prevalence of 78%, being mostly located on the buccal surfaces of the teeth; prevalence of recessions increases with age¹⁷ and is related to several factors such as presence of gingival inflammation, tooth positioning and morphology, brushing trauma, and orthodontic movement.^{18,19}

Treatment of any disease involves the diagnosis of the etiological factors that determine the disease, its elimination, and/or control at lower levels at which the host's body can maintain a homeostatic process.²⁰ Therefore, the treatment of gingival recessions should be based on the diagnosis, elimination and/or control of the etiological factors that determined the recession.^{20,21} However, some predisposing factors of etiological risk, such as anatomical variables and behavioral factors, due to their characteristics, can be extremely difficult to eliminate and/or control.^{21,22,23}

Successful treatment with grafts depends on graft survival, which in turn depends on three points of collateral circulation from the connective tissue and periodontal space, i.e., collateral plasma circulation, and periodontal ligament circulation.²⁴ Biofilm control is essential for the success of surgical therapy, because in the presence of an inflammatory response, gingival nutrition is compromised, which ends up scaling and leading to the onset of gingival retraction.²⁵

However, several studies have concluded that orthodontic movement, per se, is not an etiological factor for periodontal recession, and that a careful inspection of the gums and bone of teeth that are pressured during orthodontic movement should be performed.^{26,27}

The presence of periodontal recessions can lead to undesirable problems such as root sensitivity, aesthetic compromise, greater risk of decay on the root surface, and loss of periodontal support,^{28,29,30} but it rarely leads to tooth loss.^{30,31,32}

Gingival recessions that have root surface exposure without having bone or mucogingival loss in an interproximal area are classified as Miller's class I and II, and have predictable results after full root coverage.³³

The technique selected for the treatment of gingival retraction used in the present case had its efficiency and predictability proven by two previous studies,^{34,35} achieving high rates of coverage and gain of keratinized tissue, in addition to color and texture close to those of adjacent tissues.

In one study, the same type of treatment that was used in this case report was applied to treat 73 Miller's class I retractions (mean height of retractions = 2.8 mm), in 22 patients. After a one-year follow-up, the authors observed that an average of 97% of the root surfaces remained covered with gingival tissue, and that 64 of the 73 retractions (88%) were completely covered. Considering patients, 16 out of 22 (73%) had complete coverage of all treated retractions within one year. Moreover, there was an increase in keratinized gingival tissue (0.6 mm) at one year post-surgery for all treated areas. The authors concluded that the proposed surgical technique was effective for the treatment.³⁴ Subsequently, in 2006, in another study, 29 Miller's class I and II multiple retractions were treated in 10 patients.³⁵ The results of this case series study showed attachment gain (mean = 1.97 mm), decreased retraction (mean = 2.03 mm), and increased keratinized tissue (mean = 1.31 mm) in the treated areas. Complete coverage was achieved in 27 out of 29 retractions and in 9 out of 10 patients, resulting in complete coverage in 93.1% of the recessions and 90% of the patients. The present clinical case corroborated the results of these studies, showing 100% root coverage in tooth #24 [FDI notation]. Furthermore, as seen in Figure 8, the region of the treated tooth showed a gain in keratinized gingival tissue. It should be mentioned that the patient's complaints of hypersensitivity and aesthetic impairment were resolved. It is also noteworthy that the present clinical case as well as the aforementioned studies involved treatment of Miller class I retractions, which has been shown to have a good prognosis.

Conclusion

To achieve the expected results successfully, it is necessary to act rigorously in order to seek and apply the most suitable technique. Accordingly, several factors must be observed and controlled. Also bearing in mind how meticulous and judicious the treatment of gingival recession is, anatomical knowledge is of the utmost importance, regardless of the technique applied. In the case reported here, the technique of root coverage by grafting of subepithelial connective tissue – when following all the parameters described in the literature – has a good prognosis, but this is associated with the correct indication, leading to highly significant aesthetic and functional rehabilitation.

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