

# CREEPING ATTACHMENT AFTER ROOT COVERAGE ASSOCIATED WITH SUBEPITHELIAL GRAFT AFTER ORTHODONTIC TREATMENT, A CASE REPORT

## CREEPING ATTACHMENT APÓS COBERTURA RADICULAR ASSOCIADA A ENXERTO SUBEPITELIAL APÓS TRATAMENTO ORTODÔNTICO, RELATO DE CASO

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### ABSTRACT

**Introduction:** gingival recession is defined as the apical migration of the gingival margin in relation to the cemento-enamel junction (CEJ). Orthodontic movement, beyond certain anatomical limits, can be harmful to the periodontium and occur mainly in cases of moderate to severe lower anterior crowding. In these situations, tooth projection and/or proclination may occur with consequent gingival recession. **Materials and Methods:** in this article we report a clinical case of root coverage with subepithelial connective graft after 10 years of orthodontic treatment. The diagnosis based on the tests performed was TR1, gingival recession without interproximal attachment loss. After 1 year of follow-up, the Creeping Attachment phenomenon was observed, which showed tissue migration to the coronal direction. **Conclusion:** this technique offers good aesthetic and functional results, in addition to favoring optimal healing due to the integrity of the receptor canal flap and the dual nutrition of the grafted tissue.

**Keywords:** periodontics; orthodontics; gingival recession.

### RESUMO

**Introdução:** a recessão gengival é definida como a migração apical da margem gengival em relação à junção amelocementária (JCE). A movimentação ortodôntica, além de certos limites anatômicos, pode ser prejudicial ao periodonto e ocorrer principalmente em casos de apinhamento anteroinferior moderado a grave. Nestas situações pode ocorrer projeção e/ou proclinação dentária com consequente recessão gengival. **Materiais e Métodos:** neste artigo relatamos um caso clínico de recobrimento radicular com enxerto conjuntivo subepitelial após 10 anos de tratamento ortodôntico. O diagnóstico baseado nos exames realizados foi TR1, recessão gengival sem perda de inserção interproximal. Após 1 ano de acompanhamento, foi observado o fenômeno Creeping Attachment, que evidenciou migração tecidual no sentido coronal. **Conclusão:** essa técnica oferece bons resultados estéticos e funcionais, além de favorecer ótima cicatrização devido à integridade do retalho do canal receptor e à dupla nutrição do tecido enxertado.

**Palavras-Chave:** periodontia; ortodontia; recessão gengival

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## INTRODUCTION

Orthodontic movement, beyond certain anatomical limits, can be harmful to the periodontium <sup>(1)</sup> and can occur mainly in cases with moderate to severe lower anterior crowding. In these situations, tooth projection and/or pro-inclination may occur with consequent gingival recession <sup>(2)</sup>.

Gingival recession is defined as the apical migration of the gingival margin in relation to the cemento-enamel junction (CEJ) <sup>(3)</sup>. This condition presents relevant aesthetic problems, difficulty in oral hygiene and chronic tooth sensitivity, requiring surgical intervention in certain situations <sup>(4)</sup>.

The autogenous connective tissue graft associated with the coronally displaced flap technique is considered the gold standard for the treatment of gingival recessions. It has better predictability in the clinical parameters of probing depth, level of clinical attachment, thickness and width of keratinized tissue, root coverage and stability of root coverage over time <sup>(5-7)</sup>.

Based on the above, this article reports a clinical case of root coverage using a subepithelial connective tissue graft after 10 years of orthodontic treatment.

## Materials and Methods

Patient F.F.L., female, 25 years old, attended in the Oral Design Dental Office complaining about the esthetics of her smile due to the presence of gingival recession on tooth <sup>23</sup>.

In the anamnesis, the patient reported not having systemic alterations and not using continuous medication. In intraoral clinical examination, it was observed that the patient had excellent control of dental biofilm and that there was no presence of inflammatory signs consistent with periodontal disease.

As for the analysis of the periodontium, it was observed that this patient had a scalloped periodontal phenotype, in which there is a greater association with a thin triangular crown, subtle cervical convexity, interproximal contacts close to the incisal edge and a narrow zone of keratinized tissue, delicate and thin gums and a relatively thin alveolar bone. The diagnosis based on the exams performed

was RT1, gingival recession without loss of interproximal attachment. The interproximal cemento-enamel junction was not clinically detectable in the mesial and distal aspects of the tooth (Figure 1). In the dental condition, the presence of CEJ, class A, and absence of cervical concavity, class -, classified as A-, were observed.

**Figure 1: Dental region. Patient diagnosed with RT1 A-.**



Given these clinical characteristics, it was suggested that the gingival recession observed in tooth 23 may have occurred mainly after orthodontic movement, as the patient reported having undergone orthodontic treatment (Figure 2).

**Figure 2: Patient's photo with 13 years old, before orthodontics treatment.**



Surgical planning was defined based on periodontal phenotype, type of recession and dental condition. Although the control of the biofilm was considered excellent, oral hygiene instruction was previously carried out, mainly aiming at the long-term successful postoperative period. The technique chosen was an autogenous graft of subepithelial connective tissue. After signing the consent form, the patient was prepared to undergo the surgical procedure.

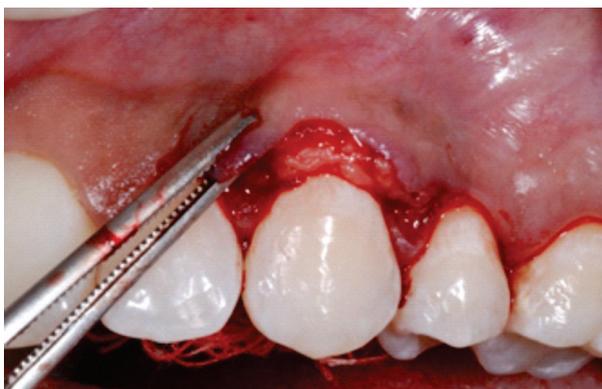
Initially, vital signs were measured, intraoral antiseptics with a 0.12% chlorhexidine gluconate mouthwash for 1 minute and surgical field disinfection with iodine. Then, local anesthesia (2% lidocaine with adrenaline 1:100,000) and primary incisions (intrasulcular incision on the free face and two oblique incisions at the base of the papilla) were performed with a 15C scalpel blade.

Surgery proceeded with mucosal detachment of the flap, producing an enveloped flap (Figure 3), de-epithelialization of the papillae and scaling and root planing with a gracey curette 5-6. In the donor site, which constituted the palate, the conjunctiva was carefully removed. The palate was chosen as the donor area due to the abundance of tissue in the region. Subsequently, the graft tissue was included inside the flap, as an envelope, in the recipient area (Figure 4), proceeding with suspensory sutures and simple interrupted with 5.0 vycril thread, keeping the flap in a more coronary position (Figure 5).

**Figure 3: Observe tissue position after flap detachment.**



**Figure 4: Positioning of the subepithelial connective graft in the surgical bed.**



**Figure 5: Final photo of the surgery. Subepithelial connective tissue graft positioned in the flap and sutured.**



After 14 days of surgery, the patient returned to the dental clinic. Normal healing was observed at the donor and recipient areas and sutures were removed. On the next week, it was possible to see the success of the treatment and the patient's satisfaction with the result. The patient was followed between 14 (Figure 6A) and, 13 months (Fig 6B) and 25 months after of surgery.



**Figure 6B: 13 months follow-up. Observe the presence of creeping attachment.**



After 1 year of follow-up, the Creeping Attachment phenomenon was observed, which showed tissue migration to the coronal direction (Figure 6B), with probing depth at normal levels (Figure 7). After 25 months, the patient was also evaluated.

**Figure 7: Probing depth after 13 months of follow-up.**



## DISCUSSION

It is known that the etiology of gingival recessions is not easy to be determined <sup>(8, 9)</sup>. It is multifactorial and arise from an imbalance in the response of periodontal tissues, often associated with orthodontic treatment, although

this aims to achieve an ideal, functional and esthetic occlusion, without causing damage to the protective and supporting periodontal <sup>(10)</sup>. Several surgical and non-surgical options are available for the treatment of gingival retraction. When gingival retraction is minimal, with adequate tissue thickness, favorable plaque control, do not affect esthetics or cause dentin hypersensitivity and/or root caries, no treatment is necessary <sup>(11)</sup>.

Different tooth conditions, including root caries and non-carious cervical lesions, may be associated with gingival recession. The presence of these dental lesions causes root/tooth surface modifications with a potential disappearance of the original CEJ and/or the formation of concavities of different depth and extension on the root surface. Pini-Prato et al. <sup>(12)</sup> classified the presence/absence of CEJ as Class A (detectable CEJ) or Class B (non-detectable CEJ) and the presence/absence of cervical concavities (step) on the root surface as Class + (presence of a cervical step > 0.5 mm) or Class - (absence of cervical degeneration) <sup>(12)</sup>. Therefore, a classification includes four different scenarios of tooth-related conditions associated with gingival recessions <sup>(13)</sup>.

Every treatment has advantages and disadvantages and the orthodontic therapy has some characteristics in relation to periodontal tissues. At the end of orthodontic treatment, the benefits can be described as dental alignment, better handling of oral hygiene, removal of occlusal trauma <sup>(14)</sup>. However, periodontal complications arising from orthodontic treatment include, among many, the development of gingival recession, with loss of alveolar bone, dehiscence, fenestration and, in some cases, loss of the interdental papilla <sup>(14)</sup>.

In cases that such problems occur, the gingival phenotype should be considered as a predisposing factor for the development of gingival recession during and/or after orthodontic therapy <sup>(15)</sup>. And when it comes to the development of gingival recessions, the thin phenotype, characterized by the presence of bone dehiscence and fenestration, favors gingival inflammation and epithelial proliferation, and ends up covering the entire area of connective tissue, quickly resulting in gingival recession <sup>(16)</sup>.

It is worth noting, additionally, that

in recent years it has been known that periodontics has somewhat changed its focus, no longer being exclusively concerned with the prevention and treatment of diseases and also seeking effective means for the loss of tissue<sup>(16)</sup>. Related to this, soft tissue grafts (gingival graft and subepithelial connective tissue graft) have been used with high success rate in periodontics for reconstruction of areas with gingival recession, loss of interdental papilla and deficiency in the alveolar ridge<sup>(17)</sup>.

This is because the characteristics of the connective tissue remain identical to those of the donor region, that is, as the graft is removed from a region where the connective tissue supports a keratinized epithelium (palate, retromolar region or edentulous ridge), its function remains the same in the receptor region and, thus, it culminates in the keratinization of the cells that repopulate its surface<sup>(18)</sup>. However, in order to achieve long-term success, it is important that adequate graft fixation, revascularization and intimate graft/recipient contact occur<sup>(18)</sup>.

Creeping Attachment is an uncommon phenomenon, so there are few clinical case reports in the literature. The occurrence of this phenomenon is due to the factors necessary for this migration to occur, among these factors we mention: recession width, graft position, interproximal bone resorption, dental position and the patient's degree of oral hygiene, all factors mentioned in the literature are demonstrated clinically in the present case report<sup>(19, 20)</sup>.

This phenomenon occurs in the postoperative period of up to two years<sup>(21)</sup>. In the study by Cortelline et al.<sup>(22)</sup>, after a period of 1 year of follow-up, creeping attachment was observed.

## CONCLUSION:

The influence position of the teeth on the alveolar process is important. The position vestibularization of the teeth is often associated with thin gingiva and thin bone in vestibular. This can influence the integrity of the periodontium during the patient's life and constitute a risk when applying orthodontic treatments. The subepithelial connective graft technique can be used with success, provided there is good indication of the case and practical theoretical

knowledge of the operator. This technique offers good aesthetic and functional results, in addition to favoring optimal healing resulting from the integrity of the recipient channel flap and the dual nutrition of the grafted tissue.

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