

Pink Resin as an Alternative for Restoration of Cervical Lesions Associated with Gingival Recession: a Case Report

Resina de Gengiva como Alternativa para Restaurações de Lesões Cervicais Associadas a Recessão Gengival: Relato de Caso

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Abstract

Gingival recession occurs when the gingival margin is located apically to the cemento-enamel junction, causing root exposure. This work aims to report a clinical case of restorative treatment of multiple non-carious cervical lesions (NCCL's) with gingival-colored resin, as an alternative approach of restorative procedure in cervical defects associated with gingival recession in the aesthetic area. A patient attended a Clinical-School complaining several NCCL's in addition to Miller's class I gingival vestibular recession in the elements: 13, 21, 22 and 23. Dentin hypersensitivity was absent, however, aesthetic appearance bothered the patient. Presence of occlusal interferences, acid feeding and inadequate brushing habits were observed as important etiological factors for NCCL's and gingival recessions. Periodontal surgery would be the treatment of choice, however, the patient needed orthodontic intervention first to promote dental alignment and correct distribution of the occlusal load. In order to decrease the progression of the lesions during the orthodontic treatment the NCCL's associated with gingival recession were restored with gingival-colored resin. Two colors of pink composite resin (color G3 and G5) were incrementally inserted, promoting a correct emergence profile, taking the resin to the lower cavity limit avoiding aggression to the periodontal tissue. Clinical follow-up of 22 months was favorable due to the appearance of restorations and satisfactory periodontal health. Gingival resin can be assigned to improve the aesthetic effect of the restoration at a low cost and time-saving.

Keywords: Gingival Recession. Tooth Wear. Composite Resins.

Resumo

A recessão gengival ocorre quando a margem gengival está localizada apicalmente à junção cimento-esmalte, causando exposição radicular. Este trabalho tem como objetivo relatar um caso clínico de tratamento restaurador de múltiplas lesões cervicais não cariosas (LCNC's) com resina de cor gengival, como uma forma alternativa de procedimento restaurador em defeitos cervicais associados a recessão gengival em área estética. Uma paciente buscou atendimento odontológico em um centro especializado por apresentar várias lesões do tipo LCNC, além de recessão gengival vestibular classe I de Miller nos elementos: 13, 21, 22 e 23 que não apresentavam sensibilidade, porém eram lesões que a incomodava quanto ao fator estético. Foram observados importantes fatores etiológicos para as LCNC's e recessões gengivais, como a oclusão desarmonica, alimentação ácida e hábitos de escovação inadequados. A cirurgia periodontal seria o tratamento de primeira escolha, contudo havia a necessidade de intervenção ortodôntica primeiramente para promover alinhamento dentário e correta distribuição das forças oclusais. Com o intuito de diminuir a progressão das lesões durante o tratamento ortodôntico optou-se por restaurar as LCNC's associadas à recessão gengival com resina composta caracterizada para gengiva. Foram utilizadas 2 cores de resina rosa (G3 e G5) de forma incremental, até o limite inferior da cavidade, promovendo um correto perfil de emergência e evitando agressão aos tecidos periodontais. Acompanhamento clínico de 22 meses mostrou um aspecto favorável das restaurações assim como boa saúde periodontal. Dessa forma, a resina do tipo gengival pode ser indicada para melhorar o efeito estético da restauração a um baixo custo e rapidez no procedimento.

Palavras-chave: Retração Gengival. Desgaste dos Dentes. Resinas Compostas.

1 Introduction

Gingival recession occurs when the gingival margin is located apically to the cemento-enamel junction, causing root exposure¹. The etiological factors related to this condition are varied, mainly related to inflammation in the gingival tissue, orthodontic movement beyond bone limits, inadequate relaxing incision, adjacent extractions, invasion of biological space, poorly adapted restorations and occlusal trauma. In addition, gingival recession may occur due to dental malposition, i.e., buccalization and / or rotation of some dental elements or anomalous insertions of bridles².

Vestibular gingival recession is a prevalent problem in populations with a high standard of oral hygiene and it is interesting to note that it affects mainly premolars and incisors^{3,4}. In order to facilitate the understanding, diagnosis and treatment of gingival recessions, the Miller classification was created based on the predictability of achieving root coverage, which consists of four classes, according to the severity of the condition⁵. Full root coverage is expected in Class I and II type recessions, in which the interproximal tissues are still intact. On the other hand, in Class III recessions, only partial coverage is expected. Minimum root coverage is expected in

Class IV recessions⁶.

Gingival recession can leave the exposed area more vulnerable and susceptible to other problems, such as non-carious cervical lesions (NCCLs), dentin hypersensitivity (DH) and root caries⁴. In addition, the aesthetic defect makes patients very uncomfortable, especially those with a high smile line (gummy smile)⁷. This relationship between gingival recession and non-carious cervical lesions has been studied and increasingly observed⁴. This intimate relationship occurs because these conditions share common etiologic factors, leading to the need for a multidisciplinary approach focusing on occlusal, restorative and periodontal assessment, and identification and correction of harmful habits, such as dietary, occupational and parafunctional³.

NCCL associated with gingival recession results in very long clinical crown when restoration is made with a traditional composite (enamel and dentin). This leads to an aesthetic compromise, breaking the harmony of the width-length ratio and the position of the gingival zenith. To overcome this problem, periodontal surgery, with a coronary positioned flap or a gingival graft can be used. It has been recommended as an ideal situation an association of the restorative procedure until the cementum enamel junction and a surgical periodontal covering procedure in the root area⁸. However, some patients are unable or unwilling to undergo surgical procedures. In such cases, a gum-colored composite can be used to make the tooth appear to have a shorter clinical crown. If there is a lost structure in the part corresponding to the crown, this region must first be restored with a tooth-colored composite, before restoring the more cervical area with pink composite resin^{8,9}.

The aim of this work is to report a clinical case of restorative treatment of multiple NCCLs with gum-colored resin, as an alternative form of restorative procedure in cervical defects associated with gingival recession in the aesthetic area.

2 Case Report

The patient sought dental care in a specialized center for the prevention and treatment of non-carious cervical lesions and dentin hypersensitivity due to several lesions and Miller's class I vestibular gingival recession in the following teeth: 13, 21, 22 and 23. The NCCLs were not associated with dentin hypersensitivity, however the patient had aesthetic complaints (Figure 1). During anamnesis and physical examination, disharmonious occlusion was observed as an important etiological factor for NCCLs and gingival recessions. However, the NCCLs are multifactorial conditions, and other factors were identified, such as biocorrosion caused by acidic foods and harmful brushing habits with wrong technique and extremely abrasive products.

Figure 1 - Initial aspect of the patient

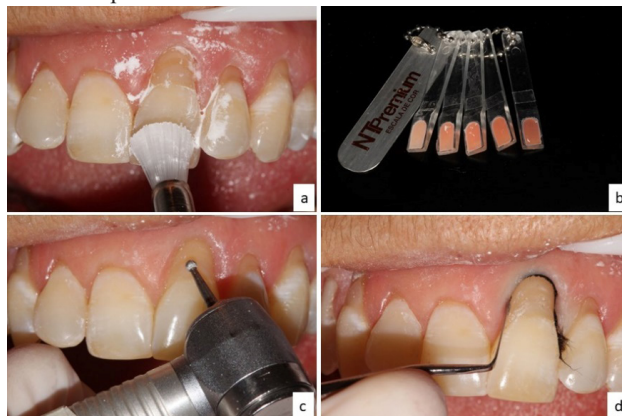


Source: The authors.

In the face of this situation, the periodontal surgery would be the first choice due to the presence of NCCL in association with gingival recession. However, the patient needed orthodontic correction first for alignment and better dissipation of desocclusive forces. As there was an aesthetic complaint, it was then decided to restore the NCCLs in order to temporarily improve the aesthetic aspect of the patient's smile, in addition to contributing to a lower concentration of tension in the cervical region, thus decreasing the possibility of lesion progression during orthodontic movement.

The patients's treatment plan involved the use of pink composite (NT premium, Coltene, Rio de Janeiro, Brazil) to restore the NCCLs and reestablish aesthetics. Prior to the isolation of the operative field, prophylaxis with pumice and water was performed (Figure 2a). Color selection was made considering the patient's gingiva, using the restorative system that offers the possibility of 5 different colors similar to the gingival shade (Figure 2 b). After the color selection, the restorative procedure was carried out in a conventional manner, following the same protocol as the use of enamel and dentin resins. The protocol also included the roughening of the tooth surface with a spherical diamond tip (Figure 2c) and insertion of the #000 retractor cord (Ultrapack, Ultradent Products Inc, Indaiatuba, SP, Brazil) (Figure 2 d).

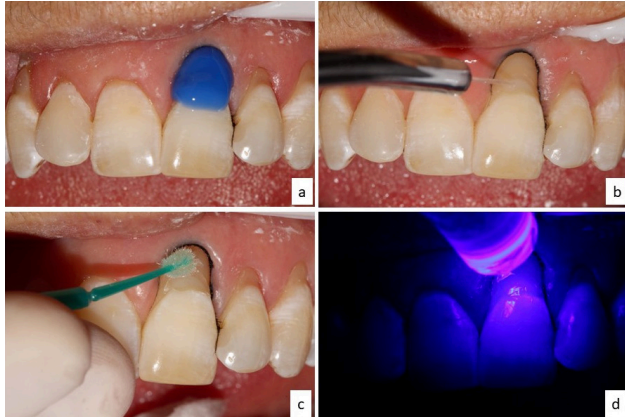
Figure 2 - a. Prophylaxis with pumice and water. b. Color system for gingival resin. c. Asperization of the dental surface with a diamond tip. d. Insertion of the retractor cord



Source: The authors.

For the adhesive step, conditioning was carried out with 35% phosphoric acid (Ultra-Etch, Ultradent Products Inc, Indaiatuba, SP, Brazil) (Figure 3a) for 30 seconds in enamel and 15 seconds in dentin, washing (Figure 3b) for 30 seconds and maintenance of moist dentin for subsequent application of the adhesive system (Figure 3c). The adhesive system used was a conventional 2-step (Ambar, FGM, Joinville, SC, Brazil) applied in 2 layers, volatilizing between each application with photoactivation at the end for 40 seconds (LD Max Gnatus photoactivator, Barretos, SP, Brazil) (Figure 3d).

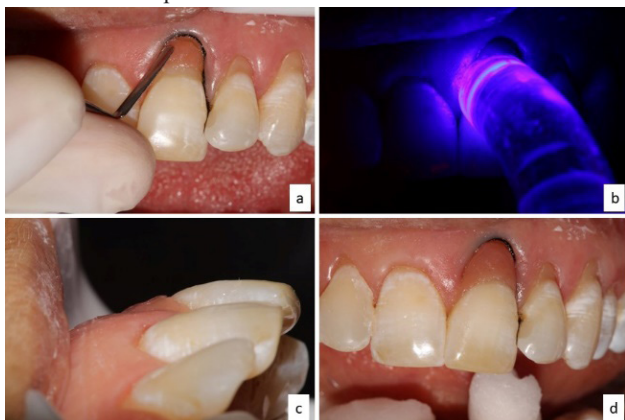
Figure 3 - a. Conditioning with phosphoric acid. b. Phosphoric acid washing. c. Adhesive system application. d. Photoactivation of the adhesive system



Source: The authors.

Then, two colors of pink composite resin (color G3 and G5) were incrementally inserted, promoting a correct emergence profile, taking the resin to the lower cavity limit avoiding aggression to the periodontal tissue (Figure 4a). The sculpture was made with a Sprafill ½ insertion spatula (Golgran Millennium, São Caetano do Sul/SP, Brazil) and a brush, photoactivating each increment for 40 seconds (Figure 4b). There was a concern to insert the resin only where there was mineral loss, preventing overcontour of the restoration. The design of the natural gingiva was also respected in relation to the gingival Zenith (Figure 4c-d).

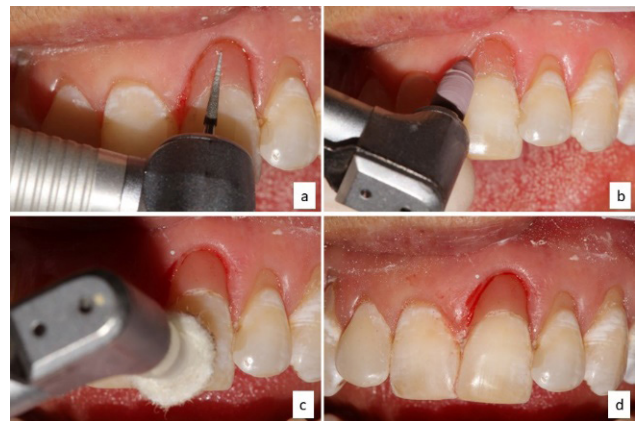
Figure 4 - a. Insertion of the gingival composite resin. b. Photoactivation of gingival resin. c. Emergence profile immediately after the restorative procedure. d. Front view of the restoration after photoactivation



Source: The authors.

Finally, the restorations were finished and polished, in accordance with following protocol steps: extra-fine diamond tip (3195FF KG Sorensen, Cotia, SP, Brazil) (Figure 5a) to remove coarse excess, polishing silicone tips (American Burns, Palhoça, SC, Brazil) associated with a hydrosoluble lubricant (Figure 5b). Then, it was used a felt associated with diamond paste (Diamond R, FGM, Joinville, SC, Brazil) (Figure 5c), obtaining a smooth and shiny surface (Figure 5d).

Figure 5 - a. Removal of excess and initial finishing of the restoration. b. Finer finish and polishing with sequential abrasive rubbers. c. Final polishing with felt and diamond paste. d. Final appearance after finishing and polishing



Source: The authors.

The same was done for teeth 13, 22 and 23 due to the extent of mineral loss and gingival recession (Figure 6). For posterior teeth that also had NCCLs, it was decided to restore them with conventional enamel and dentin resin because they were not areas that appeared in the patient's smile.

Figure 6 - Final aspect of the patient's smile after restoring the anterior teeth with gingival resin



Source: The authors.

Clinical follow-up of 22 months was favorable due to the appearance of restorations and satisfactory periodontal health (Figure 7a-c). However, until reassessment, the patient had not yet started orthodontic treatment.

Figure 7 - Repolishing composite resins after 22 months of follow-up. a. Smile view. b. lateral view. c. Front view



Source: The authors.

This case report was written following the guidelines from CARE (Case report guidelines) and it was approved by the Research Ethics Committee of the State University of Montes Claros, Minas Gerais state, Brazil (#4.667.755). Participant's images and information were obtained through signed informed consent. All ethical precepts were followed according to the 466/12 resolution, ensuring the preservation of data and confidentiality.

2.1 Discussion

Gingival recessions can occur in two different ways. Firstly, the generalized gingival recession is found in periodontally untreated populations with poor oral hygiene. The other type is usually related to traumatic factors and often involves only a few teeth or a group of teeth. This latter pattern frequently occurs in regions without plaque and associated with loss of hard tissue (enamel and dentin) causing smooth and polished lesions¹⁰. When gingival recession is present, the affected tooth appears to be longer and the free gingival margin may become asymmetrical by comparing the right and left quadrants. Because of this anti-aesthetic appearance, patients can seek dental treatment in places of aesthetic impairment or when associated with dentin hypersensitivity⁶.

Several surgical techniques have been used to treat isolated and multiple gingival recessions. The success of therapy has been associated with the stage of the defect, according to some classifications, such as the Miller classification². Treatments for gingival recession include mainly gingival graft and guided tissue regeneration. These treatments generally result in better aesthetics, elimination or reduction of dentin hypersensitivity and reduced risk of root caries development¹¹.

The subepithelial connective tissue grafts provide

significant root coverage, optimal clinical attachment and gain of keratinized tissue. This is considered the gold standard procedure in the treatment of gingival recession¹². However, some difficulties are encountered in this technique, such as: ideal donor tissue thickness between 1.5 to 2 mm and anatomical factors, which include the presence of exostosis and atresia on the palatal area^{11,12}. In addition to these difficulties, another important point is related to the surgical technique itself, which is often not well accepted by patients. The discomfort generated, the healing time, or even the cost and unpredictability when a large volume of tissue is missing are important factors to be considered¹³.

Because of these difficulties and disadvantages related to surgical treatment, other options may be carried out with the intention to restore the aesthetic when gingival recession is associated with NCCL. In this way, the restoration with pink composite resin may overcome graft tissue limitations and offer a good alternative to restore the lost tissue aesthetically and mechanically¹⁴. The main advantages of these "gingival restorations" are the low cost, comfort, and time required for the procedure¹³.

Due to the loss of bone and gingival insertion in the recession area, both the cementum and the dentin of the root are exposed, thus being more susceptible to the etiologic factors of dentin hypersensitivity and non-carious cervical lesions⁴. Through an interdisciplinary work the patient in this case report was evaluated by a periodontist, which, in the first time indicated surgical intervention. However, after analyzing the occlusion and periodontal profile, surgery would not be the best approach in the moment, due to the risk of recurrence during orthodontic movement. In addition, the patient expressed opposition to a surgical procedure. Instead, she opted for restoration of the NCCLs with the pink composite resin because this technique allowed satisfactory function and aesthetics at lower cost and discomfort. The literature has corroborated with this clinical decision, since optional techniques for rebuilding lost tissues are used in some conditions where surgery is not the best option^{9,15}.

Because the patient needed orthodontic treatment for better dental alignment in order to correct the dissipation of tension forces in occlusive and desocclusive movements, it was a decisive factor for the restorative procedure of NCCL's associated with gingival recession. Since orthodontic movement contributes to the progression of already established NCCL's, the restoration of these lesions prior to the placement of the orthodontic appliance becomes an important preventive measure¹⁶.

The application of composite resin in areas of gingival recession must be well evaluated, avoiding excesses of the material. Gingival inflammation and biofilm retention are common problems when the restoration is not well contoured and finished¹⁷. It is important to precisely evaluate the end of the cavity as a limit for the insertion of the restorative material, since it is not advisable to insert composite resin in a recession

area without a cavity. Pink composite is a realistic alternative to surgery that allows immediate results at a relatively low cost recreating natural tooth proportions¹⁸.

This case report has some limitations, specially related to the study type, which does not allow comparing other products and approaches. Also, it is necessary to emphasize the individualities of each patient, not confirming the results for the general population. Despite the limitations, this clinical report has clinical importance for demonstrating the procedure steps for this new approach, considering a 22-month follow-up period.

3 Conclusion

NCCL associated with gingival recession is a complex and frequent situation in the daily clinic and interventions are necessary in order to reestablish lost dental structures for an adequate function and aesthetics. The treatment plan should be made after a thorough occlusal and periodontal evaluation of the patient. Although surgical periodontal covering procedure is a gold standard therapy, there are some situations in which its choice is not feasible and other approaches are available, such as restorations with composite resin only. For aesthetic improvement in these cases, gingival resin may be indicated as a low cost and time-saving procedure.

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