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Combined Treatment of Non-Carious Cervical Lesion and Gingival Recession: Case Report.

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CASE REPORT

ABSTRACT

The non-carious cervical lesion (NCCL) makes itself more present in the daily environment of a dentistry clinic. As it is a multifactorial etiology pathology, it is important that we should have the knowledge of such factors so we could have a proper diagnosis, favorable results regarding treatment and prevent future lesions. The loss of tooth structure and the gingival recession (GR) are both causes of patient's complaints of sensitivity due to the exposure of dentinal tubules. This paper aims to report a clinical case on the combination therapy of NCCL associated with gingival recession. The treatment of choice was, firstly, the restoration of NCCLs in the maxillary premolars affected (14,15,24 and 25) with composite resin to in a second time, a combined root coverage surgery will be performed with subepithelial connective tissue graft. It was possible to conclude that the combined treatment of GRs and NCCLs, associating the restoration of lesions with composite resin with root coverage surgery by the tunneling technique provided complete root coverage and loss of tooth sensitivity.

Keywords: Dentin Sensitivity, Gingival Recession, Gingiva, Tissue Transplantation, Composite Resins.

Tratamento Combinado de Lesão Cervical não Cariosa e Recessão Gengival: Relato de Caso

RESUMO

A lesão cervical não cariosa (LCNC) torna-se cada vez mais presente no cotidiano de uma clínica odontológica. Por se tratar de uma alteração de etiologia multifatorial, é importante que tenhamos o conhecimento de tais fatores para que possamos ter um diagnóstico adequado, resultados favoráveis no tratamento e prevenir lesões futuras. A perda de estrutura dentária e a recessão gengival (RG) são causas de queixas de sensibilidade dos pacientes devido à exposição dos túbulos dentinários. Este artigo tem como objetivo relatar um caso clínico sobre a terapia combinada de LCNC associada à recessão gengival. O tratamento de escolha foi, primeiramente, a restauração das LCNCs nos pré-molares superiores afetados (14, 15, 24 e 25) com resina composta e, em um segundo momento, foi realizada uma cirurgia de recobrimento radicular com enxerto de tecido conjuntivo subepitelial. Foi possível concluir que o tratamento combinado de GRs e LCNCs, associando a restauração das lesões com resina composta à cirurgia de recobrimento radicular pela técnica de tunelização proporcionou recobrimento radicular completo e perda de sensibilidade dentária.

Keywords: Sensibilidade dentaria, Recessão Gengival, Gengiva, Transplante Tecidual. Resinas Compostas.

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INTRODUCTION

Problems related to the progressive loss of tooth structure are becoming frequent and increasing in clinical practice. With increasing life expectancy, people are spending more time with their natural teeth, causing them to have greater exposure to the etiological factors that lead to non-carious cervical lesions.[9].

Non-Carious Cervical Lesion (NCCL) is defined by the loss of tooth structure in the cervical region of the tooth, more precisely in the Cement-Enamel Junction (CEJ) [8]. Scientific evidence demonstrates that NCCL has a multifactorial and non-bacterial onset and progression [5]. Its multifactorial etiology can be caused by chewing forces, mechanical forces performed during brushing and acid erosion, in addition to the loss of tooth structure caused by NCCL, leading to the exposure of dentin tubules, thus causing dentin hypersensitivity [11], which can be explained by osmotic changes that result in increased fluid flow in the dentin tubules, which ends up activating the nerves located on the pupal side of the tubules, resulting in the generation of action potentials that are interpreted as pain by the patient [20]. Each etiological agent contributes differently, so it is essential to know how much each one is acting in order to have greater success in the treatment and prevention of future injuries [12].

Gingival recession (GR) is defined as the movement of the marginal tissue apical to the cement enamel junction, resulting in exposure of the root [2]. Gingival recession is considered a common condition, and its extent and prevalence increase according to the patient's age [17]. It is also known that smoker patients have GR more frequently, this is due to loss of insertion caused by tobacco [10].

Among the various factors that make up the etiology of GR, the most frequent are: brushing trauma and periodontal disease. Painful symptoms can be present in elements that have gingival recession. This pain can lead the patient to neglect their basic oral hygiene, thus triggering greater cavities and periodontal diseases [1].

Furthermore, it is possible to find combined lesions, characterized by the association of NCCL and gingival recession, simultaneously. The upper premolars are the most commonly affected teeth, both by GR and NCCLs, and the patient's age, oral

hygiene, gastroesophageal diseases and occlusion trauma are significantly associated with the presence of both conditions, and with dentin paresthesia. [16].

Each case will have a diagnosis and planning directed to the patient's needs, which can be individualized or combined treatment. In these cases, occlusion adjustments, NCCL restorations, root coverage and prevention of etiological factors are treatment options [3]. Cervical wear, root sensitivity and aesthetic compromise are the reasons that lead to the treatment of GR, with NCCLs participating in the same issues, and the treatment of these combined lesions can be successfully carried out through periodontal surgery with coronal glide of the flap associated with connective tissue graft or substitutes thereof [4]. Therefore, the present work aims to report a clinical case on the combined therapy of NCCL associated with GR.

CASE REPORT

A female patient, 36 years old, without any type of systemic impairment attended dental care, as she had not been to the dentist for a long time and thought she had cavities. On clinical examination, no carious lesion was observed, however, multiple type 1 (RT1) gingival recessions were noted, as there was no loss of interproximal attachment, in teeth 13, 14, 15, 23, 24, 25, 36, 35, 34, 44, 45 and 46 associated with NCCL in teeth 14, 15, 24 and 25 (Figure 1). With the air jet test, the patient reported significant tooth sensitivity in the GR and NCCL region. The initial measurements of each and the band of keratinized mucosa (KM) around the affected teeth were taken, according to the following table.

Table 1: Measurements of gingival recessions and KC range (in millimeters).

TOOTH	RECESSION SIZE	KC BAND SIZE
15	1 mm	4 mm
14	2 mm	3 mm
13	Incipient	4 mm
23	0,5 mm	4 mm
24	4 mm	3 mm
25	2 mm	3 mm

36	1 mm	3 mm
35	1 mm	3 mm
34	1 mm	3 mm
44	1 mm	1 mm
45	1 mm	2 mm
46	1 mm	2 mm

Figure 1: Initial aspect of GR and NCCLs, with emphasis on the upper region. A) view of the smile, showing the inclusion of premolars in the patient's smile. B) intraoral view. C) intraoral view of the patient's right side. D) intraoral view of the patient's left side.

There was no increase in probing depth at any site and the patient had a periodontal phenotype that, despite the wide range of keratinized mucosa, the gingival thickness was thin and scalloped with relatively elongated teeth, with mixed characteristics [22], in addition to having occlusion stability, suggesting that the etiology of GRs and NCCLs would be due to vigorous brushing, since the same groups of teeth, both in the upper and lower arches, were in the same clinical condition, associated with the type of phenotype present. Therefore, the treatment of choice was, firstly, the restoration of the NCCLs in the affected upper premolars (14, 15, 24 and 25) (Figure 2) and subsequent root coverage (Figure 3).

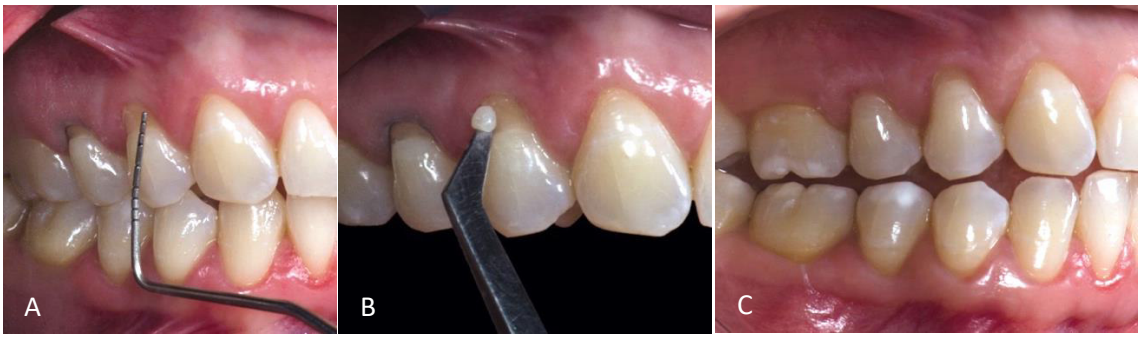

Figure 2: A) Measurement of GR with the aid of a Williams-type millimeter periodontal probe. B) Restoration of NCCLs with composite resin. C) Final appearance of restored teeth, 14 and 15.

Restorative Procedure

The affected upper premolars (14, 15, 24 and 25) (Figure 2) were initially restored with nanoparticle composite resin in color A2B (Z350XT – 3M ESPE), using the incremental technique, as they had a depression of 1 mm in depth in relation to the position of the cement enamel junction (Figure 2). At the end, in the same clinical session, finishing was carried out with extra-fine diamond burs (1190 FF – KG Sorenson) and multi-laminated (12 blades – KG Sorensen) and polishing using silicone abrasive rubber (TDV) and felt discs with polishing paste. The position of the new CEJ was defined considering the adjacent teeth as a parameter, so that, in a second step, root coverage surgery combined with sub epithelial connective tissue grafting could be performed.

Periodontal Surgical Intervention

Laboratory tests were requested, such as blood count, fasting blood glucose and coagulogram, as a pre-operative protocol, which had data within the normal range. Blood pressure (BP) was initially measured, measuring 101/66 mmHg. Thus, surgical intervention continued on teeth 13, 14 and 15, initially, starting with anesthesia of the middle superior alveolar nerves, on the patient's right side, and endings of the anterior superior alveolar nerve, with mepivacaine associated with vasoconstriction in a ratio of 1:100,000 (Mepiadre 2% - DFL).

The technique selected was the tunneling of a connective tissue graft [21], keeping the papillae intact, since the teeth involved had short gingival recessions and a good KM range, in addition to being included in the aesthetic zone of the patient's smile. Therefore, an intrasulcular incision was made on teeth 13, 14 and 15 so that the

tunneling device could be inserted into the sulcular region in order to create a tunnel that went beyond the mucogingival line to gain tissue mobility until it was possible to move coronal. Next, a connective tissue graft was removed from the adjacent palatal region, through a linear incision, and it was inserted into the tunnel, with the aid of suture, and stabilized with its aid. The gingival tissue was stabilized coronal with the aid of suspensory sutures (Figure 3).

Figure 3: Surgical periodontal procedure for root coverage. A) Scaling of the exposed root to remove contaminated cementum. B) Intrasulcular incision with #15C scalpel blade. C) Connective tissue graft already tunneled and stabilized with a simple stitch. D) Gingival margin displaced to the coronal position and stabilized with the aid of suspensory sutures. E) Image of the palatal donor area, in which a linear incision was made to remove the connective tissue graft and at the end it was sutured with simple stitches.

At the end of the procedure, 3J of red laser was applied for 30 seconds, according to the manufacturer's recommendations (Laser DMC Therapy XT), throughout the recipient and donor sites. As medication for the post-operative period, 4mg dexamethasone was prescribed to be taken orally every 12 hours, for 2 days, associated with 1g of dipyrone, every 6 hours, for 3 days, in addition to rinsing with a solution of chlorhexidine 0.12% for five consecutive days, starting only 24 hours after the surgical procedure.

Post-operative follow-up was carried out after 5 days, when a new application of 3J red laser was made for 30 seconds, according to the manufacturer's recommendations (Laser DMC Therapy XT), along the entire length of the recipient and donor sites and after 10 days, when all the stitches were removed, there was no sign of local

inflammation. After 2 months, it was possible to notice complete root coverage in the region of teeth 13, 14 and 15, with no sign of tooth sensitivity, which was measured by applying an air jet with the aid of a triple syringe (Figure 4).

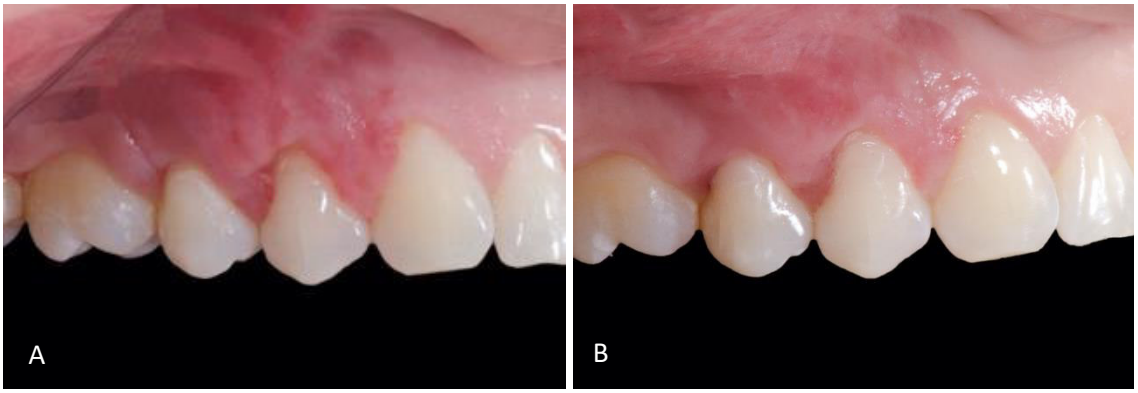

Figure 4: Post-operative monitoring of root coverage surgery in the 13, 14 and 15 regions using the connective tissue graft tunneling technique. A) 10 days post-operative. B) 2 months post-operative.

RESULTS E DISCUSSION

According to Teixeira et al., 2018 [16], the teeth most susceptible to NCCLs and GRs are premolars, as they have smaller crown volume, a considerably thinner buccal bone plate than other teeth and receive excessive lateral load during excursive movements of the mandible, which can lead to greater flexion of the tooth buccal, amplifying deformations in the cervical region, which could explain the greater prevalence and distribution of NCCL. In the present clinical case, it was identified that the teeth most affected by NCCL and GR were premolars (14, 15, 24 and 25), a fact that is in line with what has been reported in the literature.

For the treatment of NCCLs, the appropriate type of restorative material must be selected, considering the material's potential to reproduce and maintain the color and surface texture in the long term, in addition to wear resistance and also the modulus of elasticity of the material. [12]. The restorative materials most used to restore enamel and dentin lost in the cervical region as a result of NCCLs are resin-modified glass ionomer cements (GIC) and composite resins (CR), however, composite resins have been shown to be more similar to the biomechanical behavior of the healthy tooth structure [15]. The resin-modified GIC has high rates of adhesion to the tooth structure and favorable biocompatibility with the gingival tissue, however, it has low wear resistance

against abrasion and low aesthetic longevity [18]. The NCCLs, in the present clinical case, were treated with nanoparticle composite resin (Z350XT – 3M ESPE) followed by finishing with ultrafine and multilaminated diamond burs, in addition to polishing with abrasive rubbers, in order to provide greater surface smoothness, so as not to interfere with the accommodation of the gingival tissue, which had the margin in close contact with the limit of the restoration, and mimic the optical properties of natural enamel, a fact observed two months after the restorative procedure and periodontal surgical intervention.

There are different therapies for the treatment of NCCLs. The indication for the type of treatment varies according to the morphology of the lesion, such as the depth, whether greater or less than 1mm, and whether it is limited only to the dental crown or the root surface or whether it compromises both the dental crown and the root portion of the tooth simultaneously. When the NCCL is deeper than 1mm and narrow to the clinical crown, there are studies that indicate its restoration with composite resin or resin-modified glass ionomer cement [24,25,26,27]. However, when less than 1mm in depth and strict to the clinical crown, the indication is to monitor the progression of the lesion, occlusal adjustment and application of desensitizing agents, when there is dentin paresthesia [28,29]. However, when the NCCL is greater than 1 mm deep and is associated with GR, the therapeutic indication is restoration with composite resin or resin-modified glass ionomer cement associated with root coverage therapy that promotes coronal sliding of the flap, which may be accompanied by of autogenous graft or a substitute [30,31,32,33] The therapy selected for the clinical case, associated the restoration, with composite resin, to root coverage surgery by tunneling a sub epithelial connective tissue graft, leaving the new margin gingival in a more coronal position, without covering the resin, but rather at the limit of it, compatible with the limit of the new CEJ.

Different surgical procedures have been reported in the literature [4,7,14,19] in order to promote success in root coverage, especially when associated with NCCL, including coronal flap sliding and tunneling procedures, combined with connective tissue grafting, considered the most predictable options for single and multiple recession defects, reducing the depth of recession and achieving adhesion, in addition to increasing the width and thickness of the keratinized mucosa, providing long-term

stability of the gingival margin. If there is any contraindication to removing the gingival graft from the palatal donor area or if the patient wishes to avoid a second surgical area, the use of acellular dermal matrix, collagen matrices and/or enamel matrix derivatives may be a valuable treatment alternative [4]. In the present clinical case, the technique selected was tunneling associated with the sub epithelial connective tissue graft by Zabalegui (1999) [21], coming from the palatal donor area, providing a satisfactory result in terms of root coverage capacity and increase in the range of keratinized mucosa. The tunneling technique allows obtaining predictable results, in terms of root coverage and increasing the amount of keratinized gingival, allowing the preservation of the papillae, as there are no vertical incisions to be made, ensuring a better blood supply to the graft and achieving excellent aesthetic results and functional in the long term [13, 21].

The study by De Rouck et al., (2009) [22] with the aim of detecting periodontal biotypes in a sample of 100 periodontal healthy volunteers with different combinations of morphometric data related to the upper central incisors and adjacent soft tissues confirmed the existence of gingival biotypes, thin and thick, but half could not be classified as such, as these individuals showed scalloped, clear and thick gums with thin teeth, a narrow zone of keratinized tissue. This finding is very similar to that of the clinical case presented, characterizing a mixed periodontal phenotype due to the characteristics of a wide range of keratinized gingival, but thin and scalloped with relatively elongated teeth, which may have helped in the development of GRs, in addition to justifying the surgical approach periodontal.

FINAL CONSIDERATIONS

It was possible to conclude that the combined treatment of GRs and NCCLs, initiated by the restoration of the lesions with composite resin and subsequent root coverage surgery using the tunneling technique with complete coverage of the connective tissue graft, optimized the therapeutic result, providing complete coverage of the GRs and absence of dental sensitivity, restoring quality of life to the patient.

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