

Periorestorative Approach for Gingival Recession Associated with Non-carious Cervical Lesion – A Case report

Mohammed Azamulla^{1*}, Sufia Khan², Abhijit Dutta², M. Geetha Kumari², Shipra Kumari³, Ankita Rai⁴

¹Department of Periodontology, Awadh Dental College and Hospital, Jamshedpur, Jharkhand, India.

²Department of Oral Pathology, Awadh Dental College and Hospital, Jamshedpur, Jharkhand, India.

³Department of Periodontics, Awadh Dental College and Hospital, Jamshedpur, Jharkhand, India.

⁴Department of Conservative Dentistry and Endodontics, Awadh Dental College and Hospital, Jamshedpur, Jharkhand, India.

Abstract

Gingival recession is frequently associated with non-carious cervical lesion (NCCL). NCCL includes abrasion and abfraction as well as erosion. The usual clinical presentation is the presence of v-shaped ditch in the cervical areas of tooth with considerable loss of tooth structure. The defect was filled with RMGIC followed by CTG with coronally advanced flap. The present case reports with miller Class I gingival recession with deep abrasion.

Keywords: Cervical lesion, Connective tissue graft, Coronally advanced flap, Resin modified GIC.

INTRODUCTION

Gingival recession is defined as an apical shift of the gingival margin (GM) with exposure of the root surface to the oral environment.^[1] Gingival recession is usually measured as the distance from CEJ to the most apical extension of GM. It is caused by periodontal disease, aggressive toothbrushing, uncontrolled orthodontic movement, improper restorations, tooth malposition, and frenum pull. Root exposure resulting from gingival recession leads to tooth sensitivity, root abrasion, chemical erosion, root caries, and adverse esthetic.

Gingival recession is frequently associated with cervical wear (Non-carious Cervical Lesions [NCCL]). Non-carious cervical lesions (cervical wear) are defined as the loss of tooth substance at the cemento-enamel junction.^[2] These lesions include abrasion, erosion, and abfraction. Abrasion is the loss of tooth substance from factors other than tooth contact.^[3] Tooth brushing has been implicated as a major cause, and many factors such as improper or incorrect tooth brushing technique, excessive brushing force, harder bristle stiffness, increased brushing frequency, and higher abrasivity of toothpaste are contributory. Erosion is the loss of dental hard tissues by chemical action not involving bacteria.^[4] Erosion can be either intrinsic or extrinsic based on the source of acid. Intrinsic sources of acids originate in the stomach and are associated with eating disorders, such as anorexia and bulimia nervosa,^[5]

or with acid reflux and regurgitation.^[6] Extrinsic sources are acids contained in dietary components, such as carbonated soft drinks and fruit juices.^[7,8] Abfraction is defined as the pathological loss of tooth substance caused by biomechanical loading forces that result in flexure and fracture of enamel and dentine at a location away from loading.^[9,10] Abfraction is the loss of tooth structure when the cervical fulcrum area of a tooth is subjected to unique stress, torque, and moments resulting from occlusal function, bruxing, and parafunctional activity.^[11,12] These flexural forces can act to disrupt the normal ordered crystalline structure of the thin enamel and underlying dentin by cyclic fatigue, leading to cracks, chips, and ruptures in the cervical region.^[11,13]

NCCL can be treated by occlusal adjustment, toothbrushing instructions, and/or restorative procedures. Various restorative materials have been used in the management of NCCL. Composite restoration and more recently the resin based ionomer restorations have been successfully employed. These

Address for correspondence: Dr. Mohammed Azamulla, Department of Periodontics, Awadh Dental College and Hospital, Jamshedpur - 580 009, Jharkhand, India.
Email: drmedazam@gmail.com

Received: Jun. 12, 2022; **Accepted:** Jul. 07, 2022; **Published:** Aug. 08, 2022

This is an open access journal, and articles are distributed under the terms of the Creative Commons Attribution-NonCommercial-ShareAlike 4.0 License, which allows others to remix, tweak, and build upon the work non-commercially, as long as appropriate credit is given and the new creations are licensed under the identical terms.

How to cite this article: Azamulla M, Khan S, Dutta A, Kumari MG, Kumari S, Rai A. Perio-restorative Approach for Gingival Recession Associated with Non-carious Cervical Lesion – A Case report. J Res Adv Dent 2022;13(4):257-260.

Access this article online

Website:
www.jrad.co.in

DOI:
<https://doi.org/10.53064/jrad.2022.13.4.244>

conventional restorative techniques result in protection against further loss of tooth structure and sensitivity; however, they may not meet the esthetic demands of the patients. Despite the close association between gingival recession and NCCL, restorative procedures such as composite restorations are selected frequently as the single therapy to treat this condition. However, optimal functional and esthetic results may require the combined use of periodontal and restorative procedures. Periodontal procedures such as coronally advanced flap, combined use of connective tissue graft, and coronally advanced flap have been used to treat NCCL. Root coverage procedures can achieve GM at the level of CEJ and in gingival recessions associated with NCCL, this may still present dentin sensitivity, due to the NCCL that is exposed above the GM.^[14-16] Hence, a combination of periodontal surgery for root coverage and restorative procedures for NCCL is a viable treatment plan.

CLINICAL PRESENTATION AND CASE MANAGEMENT

A 27-year-old systemically healthy male was referred to the Department of Periodontology, Krishnadevaraya College of Dental Sciences and Hospital and research centre, Bangalore, based on their complaints (Dentinal hypersensitivity/DS and esthetic concern) with Miller Class I buccal gingival recessions, associated with NCCL, Teeth 14 was affected by NCCL and gingival recession (Figures 1 and 2). Different therapeutic options were also discussed with the patient, who understood pros and cons of each and signed a written informed consent. The patient initially received oral hygiene instructions to eliminate the traumatic hygiene habits related to the etiology of the recession.

The following clinical parameters were evaluated at baseline (before treatment), postoperatively 6 months, plaque index (PI), gingival index (GI), bleeding on probing (BOP), relative gingival recession (RGR), dentinal sensitivity (DS), and keratinized tissue width (KTW). The PPD, RGR, and KTW were measured using a PCP UNC 15 periodontal probe. Further patient was asked about the presence/absence of cervical sensitivity in the sites after a thermal stimulus.

SURGICAL PROCEDURES

All surgical procedures were performed under aseptic environment. Subject was draped, perioral skin was disinfected using povidone-iodine 10% and was asked to rinse with chlorhexidine mouthwash 0.2% for 30 s. The surgical area was anesthetized with 2% lignocaine hydrochloride containing 1:200000 adrenaline. Intrasulcular incision was made at the buccal aspect of the involved tooth followed by two horizontal incisions made perpendicular to the adjacent interdental papillae 1 mm apical to the level of the coronal border of the NCCL without interfering with the GM of the neighboring teeth. Vertical incisions were made each at the end of the horizontal incision extending beyond the mucogingival junction and a full thickness flap was raised up to the mucogingival junction, then from this point a partial thickness flap was elevated apically.



Figure 1: Pre-operative

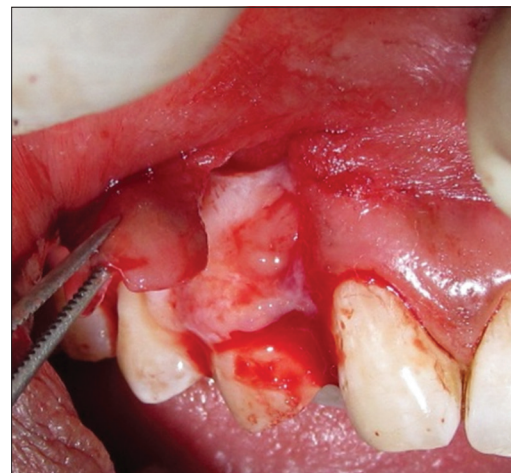


Figure 2: CTG Secured over RMGIC

The flap elevated was sufficiently made free of tension by eliminating all the muscle insertions present in the thickness of the flap to advance coronally as required. In the CTG+R site, the entire length of the non-carious cervical lesion was restored with resin modified glass ionomer restoration, following the manufacturer's instructions. The defect was restored in such a way to mimic the original contour of the tooth. Following restoration, the adjacent papillae was deepithelialized and the CTG harvested from the palate was placed to cover the entire restored site. The CTG was stabilized with a sling suture, and then the flap was coronally advanced and sutured to completely cover the graft and a periodontal dressing was placed (Figures 1-4).

The connective tissue graft was harvested from palate using trap door incision technique as described by Edel in 1974.^[17] Following a "trap door" flap design, a no.15 blade was used to make a partial-thickness horizontal incision with a bevel about 3 mm apical to the GM of the first premolar extending toward the first molar. Two vertical incisions were made mesiodistally. Tissue forceps are used to lift the prepared palatal flap edge. It is reflected toward the center of the palate

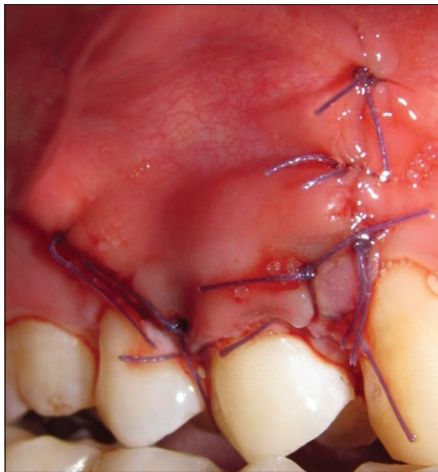


Figure 3: Flap Sutured



Figure 4: Post-operative 6 months

and the underlying connective tissue exposed. An incision perpendicular to the bone is made around the edge of the connective tissue, facilitating connective tissue reflection from the bone. A periosteal elevator was used to retrieve the connective tissue. The CTG was placed in a saline while the palatal wound was sutured and stent was placed (Figure 2-4).

Post-operative healing was uneventful. Restorative procedure did not increase tissue inflammation or plaque accumulation. PI and GI were zero both at baseline and at the end post-operative 6 months. There was a significant reduction in RGR from baseline to 6 months. At baseline, it was 6 mm which reduced to 4 mm postoperatively at 6 months. There was a significant increase in KTW from baseline to 6-month postoperatively. At baseline, KTW was 3 mm which was increased to 4 mm. At baseline, patient chief complaint was DS which was absent postoperatively at 6 months (Figure 4).

POST-OPERATIVE INSTRUCTIONS

- For the first 3 h after the operation, avoid hot food items to permit the dressing to harden. It is also convenient to avoid hot liquids during the first 24 h.

- Patient can try to chew on the non-operated side of the mouth. Semisolid or finely minced foods are suggested. Patient is instructed not to smoke as it may irritate your gums and the immunologic effects of nicotine may delay healing and prevent a completely successful outcome of the procedure performed.
- Patient is instructed not to brush over the pack. Brush and floss to be done over the areas of the mouth not covered by the pack. Use chlorhexidine oral rinses after brushing. During the 1st day, apply ice intermittently on the face in the operated area. It is also beneficial to suck on ice chips intermittently during the first 24 h. These methods will keep tissues cool and reduce inflammation and swelling.

Post-operative medications

Post-operative antibiotic consisted of Amoxicillin 500 mg 3 times daily for 5 days. Post-operative analgesic prescribed was Ibuprofen 400 mg 3 times daily for 3 days. Chlorhexidine 0.2% was prescribed twice daily for 14 days.

Post-operative follow-up

Initially, patients were recalled on 14th day for suture removal. Post-operative follow-up was satisfactorily done after 6 months.

DISCUSSION

Over the years, numerous surgical techniques have been introduced to correct labial and gingival recession defects. Esthetic concerns are usually the reason to perform these procedures. Clinical studies have evaluated many of the techniques. Of the various techniques used, subepithelial connective tissue graft is considered as the gold standard in the treatment for coverage of denuded roots as it is the most predictable procedure compared to the other techniques.

The association of gingival recession with NCCL requires a combined periorestorative approach, as either of the approaches alone will not solve the purpose. Various clinical trials have been conducted to assess this combined trial including the comparison of restored and non-restored sites.^[16,17-20] Limited data exist on the comparison of esthetic outcome and patient satisfaction of such combined treatment approaches.

Histological evaluation of the type of healing on the restored root surfaces needs to be evaluated. Dragoo observed histologically adhesion of fibroblasts and connective tissue to the restorations which are located in the subgingival sites in patients with large root lesions restored with resin-modified glass ionomer materials.^[21] Martins *et al.* analyzed the histological response of periodontal tissues to subgingival class V resin composite and resin-modified glass ionomer cement restorations and observed biocompatibility of all tested restorative materials. The formation of a long junctional epithelium was the predominant type of healing, with absence of connective tissue attachment and new bone formation onto the restorative materials.^[22]

As the surgical sites were scaled and root planed in the preparatory phase, the PI, GI, and BOP were score zero at

baseline. However, few areas did show the presence of BOP during the observation period of 6 months which was in agreement with the earlier studies.^[18,23,24]

Thus, the present case report reaffirms that the presence of subgingival resin modified glass ionomer restoration did not negatively influence the periodontal health with no signs of gingival inflammation which was in agreement with earlier studies.^[25-29] Regular patients follow-up, oral prophylaxis and oral hygiene instructions were instituted, helped to maintain the periodontal health. Resin modified glass ionomer restoration is well tolerated by the gingival tissues. The surgical procedure allowed control of isolation and a well contoured restoration. Dentinal hypersensitivity was nil. Excellent esthetic outcome was achieved. This goes again to reiterate that CTG achieved satisfactory root coverage and also the presence of RMGIC restoration in the NCCL does not affect the esthetic outcome.

SUMMARY AND CONCLUSION

The present case report indicates that the CTG combination with resin modified glass ionomer restoration is an effective method to cover NCCL with GR. Root coverage procedure have varied responses over a longer period of time; therefore, further studies with longitudinal observation to evaluate the stability of the results and if any creeping attachment is recommended.

Other surgical approaches and restorative materials also should be analyzed. Teeth with deeper recession and NCCL defect anatomy also should be assessed. Histologic reporting of the type of healing on restored root surfaces has not been evaluated profusely and further information on this is required and methods to enhance this retention needs to be researched. All treatments showed root coverage improvement without damage to periodontal tissues, supporting the use of CPF for treatment of root surfaces restored with RMGI as being effective over the 6-month period.

REFERENCES

- Wennstrom JL. Mucogingival therapy. *Ann Periodontol* 1996;1:671-701.
- Mair LH. Wear in dentistry--current terminology. *J Dent* 1992;20:140-4.
- Pindborg JJ. Pathology of the Dental Hard Tissues. Philadelphia, PA: Saunders; 1970. p. 274-320.
- Eccles JD. Tooth surface loss from abrasion, attrition and erosion. *Dent Update* 1982;9:373-4, 76-8, 80-1.
- Scheutzel P. Etiology of dental erosion--intrinsic factors. *Eur J Oral Sci* 1996;104 Pt 2:178-90.
- Bartlett DW, Evans DF, Anggiansah A, Smith BG. A study of the association between gastro-oesophageal reflux and palatal dental erosion. *Br Dent J* 1996;181:125-31.
- Zero DT. Etiology of dental erosion--extrinsic factors. *Eur J Oral Sci* 1996;104 Pt 2:162-77.
- Lussi A, Jaeggi T, Zero D. The role of diet in the aetiology of dental erosion. *Caries Res*. 2004;38 Suppl 1:34-44.
- Grippio JO. Tooth flexure. *J Am Dent Assoc* 1991;122:13.
- Grippio JO. Noncarious cervical lesions: The decision to ignore or restore. *J Esthet Dent* 1992;4:55-64.
- Lee WC, Eakle WS. Stress-induced cervical lesions: Review of advances in the past 10 years. *J Prosthet Dent* 1996;75:487-94.
- Heymann HO, Sturdevant JR, Bayne S, Wilder AD, Sluder TB, Brunson WD. Examining tooth flexure effects on cervical restorations: A two-year clinical study. *J Am Dent Assoc* 1991;122:41-7.
- Mayhew RB, Jessee SA, Martin RE. Association of occlusal, periodontal, and dietary factors with the presence of non-carious cervical dental lesions. *Am J Dent* 1998;11:29-32.
- Santamaria MP, Suaid FF, Nociti FH Jr., Casati MZ, Sallum AW, Sallum EA. Periodontal surgery and glass ionomer restoration in the treatment of gingival recession associated with a non-carious cervical lesion: Report of three cases. *J Periodontol* 2007;78:1146-53.
- Santamaria MP, Suaid FF, Casati MZ, Nociti FH, Sallum AW, Sallum EA. Coronally positioned flap plus resin-modified glass ionomer restoration for the treatment of gingival recession associated with non-carious cervical lesions: A randomized controlled clinical trial. *J Periodontol* 2008;79:621-8.
- Santamaria MP, Ambrosano GM, Casati MZ, Júnior FH, Sallum AW, Sallum EA. Connective tissue graft plus resin-modified glass ionomer restoration for the treatment of gingival recession associated with non-carious cervical lesion: A randomized-controlled clinical trial. *J Clin Periodontol* 2009;36:791-8.
- Edel A. Clinical evaluation of free connective tissue grafts used to increase the width of keratinised gingiva. *J Clin Periodontol* 1974;1:185-96.
- Deliberador TM, Bosco AF, Martins TM, Nagata MJ. Treatment of gingival recessions associated to cervical abrasion lesions with subepithelial connective tissue graft: A case report. *Eur J Dent* 2009;3:318-23.
- Prato GP, Pagliaro U, Baldi C, Nieri M, Saletta D, Cairo F, *et al.* Coronally advanced flap procedure for root coverage. Flap with tension versus flap without tension: A randomized controlled clinical study. *J Periodontol* 2000;71:188-201.
- Santos VR, Lucchesi JA, Cortelli SC, Amaral CM, Feres M, Duarte PM. Effects of glass ionomer and microfilled composite subgingival restorations on periodontal tissue and subgingival biofilm: A 6-month evaluation. *J Periodontol* 2007;78:1522-8.
- Dragoo MR. Resin-ionomer and hybrid-ionomer cements: Part II, human clinical and histologic wound healing responses in specific periodontal lesions. *Int J Periodontics Restorative Dent* 1997;17:75-87.
- Martins TM, Bosco AF, Nobrega FJ, Nagata MJ, Garcia VG, Fucini SE. Periodontal tissue response to coverage of root cavities restored with resin materials: A histomorphometric study in dogs. *J Periodontol* 2007;78:1075-82.
- Pegoraro LF, Scolaro JM, Conti PC, Telles D, Pegoraro TA. Noncarious cervical lesions in adults: Prevalence and occlusal aspects. *J Am Dent Assoc* 2005;136:1694-700.
- Santamaria MP, Casati MZ, Nociti FH Jr., Sallum AW, Sallum EA, Aukhil I, *et al.* Connective tissue graft plus resin-modified glass ionomer restoration for the treatment of gingival recession associated with non-carious cervical lesions: Microbiological and immunological results. *Clin Oral Investig* 2013;17:67-77.
- Mele M, Zucchelli G, Montevicchi M, Checchi L. Bilaminar technique in the treatment of a deep cervical abrasion defect. *Int J Periodontics Restorative Dent* 2008;28:63-71.
- Santamaria MP, da Silva Feitosa D, Nociti FH Jr., Casati MZ, Sallum AW, Sallum EA. Cervical restoration and the amount of soft tissue coverage achieved by coronally advanced flap: A 2-year follow-up randomized-controlled clinical trial. *J Clin Periodontol* 2009;36:434-41.
- Santamaria MP, Ambrosano GM, Casati MZ, Nociti FH Jr., Sallum AW, Sallum EA. Connective tissue graft and resin glass ionomer for the treatment of gingival recession associated with noncarious cervical lesions: A case series. *Int J Periodontics Restorative Dent* 2011;31:e57-63.
- Allegri MA, Landi L, Zucchelli G. Non-carious cervical lesions associated with multiple gingival recessions in the maxillary arch. A restorative-periodontal effort for esthetic success. A 12-month case report. *Eur J Esthet Dent* 2010;5:10-27.
- Alkan A, Keskiner I, Yuzbasioglu E. Connective tissue grafting on resin ionomer in localized gingival recession. *J Periodontol* 2006;77:1446-51.