



Use of the connective tissue graft for the coverage of composite resin–restored root surfaces in maxillary central incisors

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The purpose of this article is to report the use of the subepithelial connective tissue graft technique combined with the coronally positioned flap on a composite resin–restored root surface to treat Miller Class I gingival recessions associated with deep cervical abrasions in maxillary central incisors. Clinical measurements, including gingival recession height, probing depth, and bleeding on probing (BoP), were recorded during the preoperative clinical examination and at 2, 6, 12, and 24 months postoperatively. During the follow-up periods, no periodontal pockets or BoP were observed. The periodontal tissue of the teeth presented normal color, texture, and contouring. In addition, it was observed that creeping attachment had occurred on the restoration. This case report shows that this form of treatment can be highly effective and predictable in resolving gingival recession associated with a deep cervical abrasion. (*Quintessence Int* 2012;43:597–602)

Key words: composite resin, connective tissue, gingival recession, tooth abrasion

Extensive gingival recessions associated with deep caries or cervical abrasions caused by incorrect tooth brushing and excessive forces, respectively, are common. In these cases, complete coverage by traditional mucogingival surgical techniques might be contraindicated because of the need for extensive root planing, which could compromise the tooth.^{1,2} The combination of restorative adhesive techniques with esthetic materials and surgical coverage might be a solution.³

The response of periodontal tissue to adhesive restorative materials has already been reported in the literature. Biocompatibility of composite resin or resin-modified glass-ionomer cement restorations to periodontal tissue were histologically investigated, and the formation of a long junctional epithelium was the predominant type of healing reported, with an absence of connective tissue attachment and new bone formation onto the restorative materials.⁴ Alkan et al³ obtained clinical outcomes after placement of a subepithelial connective tissue graft (SCTG) on a resin-modified glass-ionomer–restored root surface to treat a localized gingival recession. These authors reported a reduction in the probing depth and absence of clinical signs of inflammation. The occurrence of creeping attachment on the restoration was observed at the monthly periodontal controls.

A recent case report⁵ demonstrated that teeth with multiple gingival recessions associated with deep cervical abrasions present on premolars and molars can be successfully treated by mucogingival surgery combined with restorative dentistry.

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Fig 1 Clinical photo at baseline. Presence of adjacent Miller Class I gingival recessions in maxillary central incisors associated with 2-mm deep cervical abrasions.



Fig 2 Restorative procedure. Deep cervical abrasions restored with microfilled composite resin.

A clinical study⁶ evaluated the treatment of gingival recession associated with noncarious cervical lesions (NCCLs) by resin-modified glass-ionomer cement or microfilled composite resin and the coronally positioned flap. After 6 months, the authors observed maintenance of root coverage with no damage to the periodontal tissue.

Despite the excellent results presented in the literature, this type of treatment has not yet been reported to solve esthetic problems in anterior teeth. The purpose of this article is to report the use of the SCTG technique combined with the coronally positioned flap onto composite resin-restored root surfaces to treat gingival recessions associated with deep cervical abrasions in maxillary central incisors.

CASE REPORT

A 48-year-old Caucasian woman was referred to a periodontist, complaining about dentin hypersensitivity and the unesthetic appearance of her maxillary anterior teeth. The intraoral clinical examination revealed the presence of adjacent Miller Class I gingival recessions in the maxillary central incisors. The gingival recessions were associated with 2-mm-deep cervical abrasions (Fig 1). These teeth presented bleeding on probing (BoP) and probing

depths of 1 mm. The trauma to the soft tissue caused by vigorous tooth brushing was considered the main etiologic factor of the gingival recessions and deep cervical abrasions.

The patient was first submitted to basic periodontal treatment comprising scaling, root planing, and oral hygiene instructions. After 4 weeks, the deep cervical abrasions were restored with a microfilled composite resin (Durafill VS, Heraeus Kulzer) (Fig 2). Ten days after the restorative procedure, the surgical procedure for coverage of the exposed roots was performed using the coronally positioned flap in combination with the SCTG. After achieving antisepsis and anesthesia, an intrasulcular incision was made from the right lateral incisors through the left lateral incisors, followed by partial thickness flap reflection. Between the maxillary anterior teeth, a tunnel divulsion was performed to preserve the interdental papilla (Fig 3). The exposed root surfaces were scaled and planed. The composite resin restorations were carefully polished and smoothed using a tapered, multifluted, carbide finishing bur under abundant saline solution irrigation. Final contouring and finishing were accomplished with progressively finer-grit aluminum oxide disks (Soflex Disks, 3M ESPE).

A palatal connective tissue graft was obtained.⁷ Using vicryl 5.0 suture (Ethicon, Johnson & Johnson), the SCTG was tunneled between the maxillary anterior teeth



Fig 3 Surgical procedure: partial thickness dissection and a tunnel divulsion.



Fig 4 Surgical procedure. (a) SCTG placed above the flap simulator under the flap; (b) The flap was positioned coronally to the SCTG, covering it completely, and secured with simple interrupted sutures and suspensory sutures.

and sutured to the distal region of the right and left lateral incisors (Fig 4a). The flap was immediately positioned coronally to the SCTG, covering it completely, and secured with simple interrupted sutures and suspensory sutures (Fig 4b). The surgical sites were then covered with a periodontal dressing.

The patient received standard orientation regarding postoperative care, and the following medications were prescribed: paracetamol 750 mg every 6 hours in case of pain, amoxicillin 500 mg every 8 hours for 7 days, and 0.12% chlorhexidine digluconate rinse every 12 hours for 14 days. The periodontal dressing was changed after 7 days and removed with the sutures on the 14th postoperative day. Follow-up was maintained for 24 months; professional supervision for oral hygiene control was done once a month in the first 6 months and every 4 months thereafter.

Clinical measurements, including gingival recession height, probing depth, and BoP, were recorded during the preoperative clinical examination and at 2, 6, 12, and 24 months postoperatively. Two months after the procedure, the patient reported being completely satisfied with the esthetic outcome. No periodontal pockets or BoP were observed within this period (Fig 5). At 6 (Fig 6) and 12 (Fig 7) months postoperatively, the periodontal tissue of the treated teeth presented normal color, texture, and contouring. Additional root coverage had occurred between 6 and 12 months as a result of creeping attachment. Twenty-four months after the procedure, satisfactory root coverage was observed of the maxillary anterior teeth, with no periodontal pockets or BoP (Fig 8).



Fig 5 Postoperative photograph at 2 months.



Fig 6 Postoperative photograph at 6 months.



Fig 7 Postoperative photograph at 12 months.

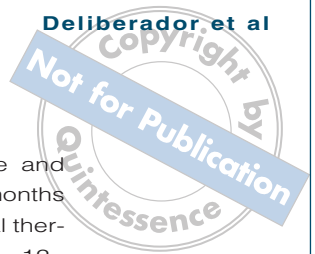


Fig 8 Postoperative photograph at 24 months.

DISCUSSION

A variety of highly predictable and esthetically acceptable mucogingival grafting procedures exist for treating intact root surfaces. However, little is known about the outcomes of mucogingival grafting on carious or restored roots.⁸ Recent studies^{4,6,9,10} have been reported in the dental literature with clinical and histologic successful results investigating different restorative materials (resin-modified glass-ionomer or microfilled composite resin) that could be used on exposed root surfaces affected by deep caries or cervical abrasions before surgical coverage.

The soft tissue root coverage techniques may be contraindicated for root surfaces where the cavity preparation and/or cervical abrasion exceeds a depth of 1.0 to 3.0 mm^{1,2}; the choice between restoration alone or a combination of composite restoration with soft tissue root coverage is up to the clinician.³ In the present case, gingival recession associated with deep cervical abrasion presented as a complex clinical situation with esthetic involvement. To simultaneously treat dentin hypersensitivity and enhance the esthetic condition, a combined restorative-surgical therapy was proposed. The choice for covering the exposed roots with a combination of restorative and surgical procedures was based on the fact that the depth of the cervical abrasions (approximately 2 mm) would not allow adequate root planing.



Some studies reported that subgingival restorations are harmful to gingival health.^{11,12} However, data from this single case revealed that the restorative material does not produce greater gingival inflammation, plaque accumulation, periodontal pockets, or BoP after 24 months of postoperative follow-up. These contradictory findings probably are related to the fact that the patient received instructions on how to brush her teeth without causing damage to the periodontal tissue and root surface before treatment and performed optimal plaque control thereafter. These instructions were reviewed and reinforced at each treatment and follow-up appointment.

Camargo et al² related that an intense plaque control using a correct toothbrushing technique with nonexcessive force is important to the maintenance of the long-term health in areas submitted to root coverage associated with restorative procedures. It is important to emphasize that the restorations were contoured and finished accurately. These procedures are essential to avoid gingival inflammation and plaque accumulation.¹²

Santamaria et al¹³ reported that the presence of resin-modified glass-ionomer filling did not interfere with coverage achieved by the connective tissue graft. These findings were also obtained in the present study with the use of composite resin.

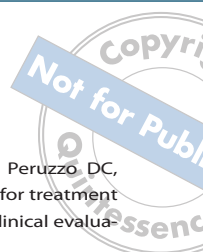
Successful root coverage includes biologic attachment between the grafted tissue and root surface. Failure to achieve attachment between the grafted tissue and root results in the formation of periodontal pockets.² In this case report, no periodontal pockets were observed after 24 months of postoperative follow-up. Histologic outcomes of surgical coverage on restored roots with resin-modified glass ionomer or microfilled composite resin showed biocompatibility of the restorative materials tested, and the formation of a long junctional epithelium was the predominant type of healing reported.⁴

Lucchesi et al⁶ successfully treated gingival recessions associated with cervical abrasions using resin-modified glass ionomer or microfilled composite resin combined with the coronally positioned flap. The treatment effectiveness was determined as

a function of restored root coverage and periodontal tissue health at 3 and 6 months after the combined restorative-surgical therapy. In the present case, at the 2-, 6-, 12-, and 24-month postoperative controls, the periodontal tissue was healthy; showed normal color, texture, and contouring; and had an absence of periodontal pockets and BoP. There was also a significant esthetic improvement, as the patient desired. The clinical conditions are stable after 24 months of postoperative follow-up.

In addition, it was interesting to observe that creeping attachment occurred on composite resin-restored root surfaces at 6 and 12 months postoperatively and remained stable at 24 months. Creeping attachment is the postoperative migration of the gingival marginal tissue in a coronal direction over portions of previously denuded root. This phenomenon can be detected 1 to 12 months after graft surgery with a mean coverage of approximately 1 mm³. Alkan et al³ demonstrated that the creeping attachment occurred after SCTG on a glass-ionomer-restored root surface. Santos et al¹⁴ described a case report with 10 years of evolution with creeping attachment that developed buccally on a moderate recession of a maxillary canine with an old composite restoration subsequent to an acellular dermal matrix. To the authors' knowledge, long-term creeping attachment and complete root coverage on a restored tooth treated with acellular dermal matrix has not been reported in the dental literature.

A 26-year prospective study¹² demonstrated that a pathogenic periodontal process may develop slowly and take 1 to 3 years to be detected clinically. In this case report, the treatment of choice showed root coverage improvement without damage to the periodontal tissues, supporting the use of the STCG for treatment of root surfaces restored with a microfilled resin composite as being effective over a 24-month postoperative period. These successful outcomes are due to a combination of factors, such as optimal plaque control, toothbrushing technique for long-term maintenance, selection of the restorative material, properly contoured and finished restorations, and choice of the proper surgical technique for root coverage.



CONCLUSION

This case report indicates that treatment of gingival recession associated with deep cervical abrasions using a subepithelial connective tissue graft combined with a coronally positioned flap to cover root surfaces restored with composite resin is effective and predictable. This form of treatment is especially suitable for the anterior region, where esthetic characteristics are of importance, since the combination of periodontal surgery and composite resin restoration can provide both periodontal health and excellent esthetic results. However, further studies are necessary for evaluation of the amount of root coverage achieved on previously restored roots and its maintenance over time.

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