RSBO

ISSN:
Printed version: 1806-7727
Electronic version: 1984-5685
RSBO. 2011 Oct-Dec;8(4):464-8

Case Report Article

Laterally positioned flap associated with subepithelial connective tissue graft for coverage of isolated gingival recession

Thiago Marchi Martins[1, 3]
Alvaro Francisco Bosco[2]
Guilherme Giovani Gazoni[1]
Sabrina Feltrin Garcia[1]

Corresponding author:
Thiago Marchi Martins
Faculdade de Odontologia, Unesp-Araçatuba
Rua José Bonifácio, n.º 1.212 – Vila Mendonça
CEP 16015-050 – Araçatuba – SP – Brasil
E-mail: thiagoperio@yahoo.com.br

[1] School of Dentistry, Integrated College of Santa Fé do Sul – Santa Fé do Sul – SP – Brazil.
[2] School of Dentistry of Araçatuba – Araçatuba – SP – Brazil.
[3] School of Dentistry, Pelotas Federal University – Pelotas – RS – Brazil.

Received for publication: September 26, 2010. Accepted for publication: November 4, 2010.

***Keywords*:** Periodontics; gingival recession; esthetics.

Abstract

Introduction: The coverage of denuded roots represents one of the challenges of periodontal treatment. Among the several techniques for this purpose is the laterally positioned flap, which has undergone some modifications since its first reports and is currently combined with other techniques such as subepithelial connective tissue graft. **Objective:** To report a case of a 41-year-old female patient who presented Miller class I gingival recession at labial surface of tooth #43. **Case report:** The main symptom of the patient was dentin hypersensitivity. Clinical and radiographic exams were performed and gingival inflammation due to the presence of bacterial plaque was diagnosed as the main cause of root recession. After basic periodontal treatment, surgery for root coverage was performed. Since the area adjacent to the recession showed a good amount of attached gingiva and no interproximal bone loss, the surgical technique of choice was a laterally positioned flap associated with a subepithelial connective tissue graft. **Conclusion:** Postoperative assessment showed complete root coverage, an increased keratinized gingival band, absence of dentin hypersensitivity, and an excellent esthetic outcome.

Introduction

Gingival recession is the apical migration of marginal gingiva, using the enamel-cement junction as landmark, consequently exposing root surface to oral environment [10]. Several factors account for this unpleasant and unaesthetic effect: trauma due to toothbrushing or other traumas on gingival tissue, lack of attached gingiva, gingival inflammation, local iatrogenic factors, anomalous insertions of bridles, altered tooth positioning, shallow vestibule, thin bone cortical or presence of bone fenestrations and dehiscences [6].

The coverage of denuded roots represents one of the challenges of periodontal treatment. Among the several techniques for this purpose is the laterally positioned flap, which has undergone some modifications since its first reports and is currently combined with other techniques such as subepithelial connective tissue graft [11, 15]. Laterally positioned flap (LPF) is indicated to cover gingival recessions of one or more teeth, allowing better aesthetic, increasing attached gingiva, decreasing both hypersensitivity and cervical caries. This technique should not be used in the presence of interproximal periodontal pocket, areas of excessive root prominence and in the presence of excessive cervical abrasions. LPF was first described by Grupe and Warren [9] as a surgical procedure comprising the use of a full-thickness pedicle flap moved horizontally to cover the denuded root; this can consequently lead to the exposure of the donor area's bone tissue. Staffileno [16] recommended the use of a partial-thickness pedicle flap; consequently maintaining the donor area covered by periosteum. Concerned with the donor area as well as with the flap coverage, Parkinson *et al.* [14] suggested the double flap technique. In this technique, we have a partial-thickness flap at the area further from the receptor site, while a total-thickness flap is raised in the area close to it. Therefore, the receptor area will receive a mucoperiosteal flap, at the same time that, the donor area will be covered by tissues of the partial flap, avoiding bone cortical exposure to oral environment.

In the continuing search for improving the outcomes obtained with LPF, Bosco *et al.* [3] proposed the bevel inversions in a way that an internal bevel is executed in the receptor area and an external bevel is done in the flap to be moved, aiming to obtain better attachment of the flap to the receptor area and to favor the aesthetic result due to minimize the appearance of the incision line. In 1987, Nelson [13] proposed the coverage of the connective graft by a laterally positioned flap. This author presented this technique as a bilaminar reconstructive technique because the recession would be cover by two tissue layers: connective tissue graft and LPF.

The aim of this study was to report a clinical case of an isolated gingival recession treated by subepithelial connective tissue graft associated with LPF.

Case report

Patient E.M.S, female, leucoderm, 41 years-old sought for the Post-graduation Clinics of Periodontics, School of Dentistry of Santa Fé do Sul (FUNEC, Sao Paulo, Brazil) with chief complaint of gingival recession and dentin hypersensitivity when toothbrushing. At intra-oral clinical examination, we found a Milar Class I gingival recession at labial surface of the lower right permanent canine tooth (#43), in addition to a bridle inserted in the gingival margin (figure 1). At radiographic examination, no interproximal bone loss was observed.

Initially, patient underwent basic periodontal treatment comprising scaling, root planing and oral hygiene control. After five weeks, periodontal surgical treatment was proposed (subepithelial connective tissue graft associated with LPF), aiming to cover the denuded root surface and increase keratinized gingival band.

Following extra- and intra-oral antisepsis and local anesthesia of lingual, buccal and inferior alveolar nerves with 2% mepivacaine (DFL, Indústria e Comécio S.A., Rio de Janeiro, RJ, Brazil), a 15c scalpel blade (Solidor, São Paulo, SP, Brazil) was used to perform two vertical incisions, one mesially to lateral incisor and the other distally to canine tooth (figure 2). The incision started 2 mm below the distal gingival margin of tooth #43 with internal bevel. Then, the incision skirted the mesial surface of this tooth with external bevel, to expose the connective tissue surrounding the denuded root surface.

Continually, an intrasulcular horizontal incision was executed in the lateral incisor (tooth #42) and joined the vertical incision starting from the mesial surface of tooth #42 toward to the alveolar mucosa. From this incision, a partial-thickness flap was raised, which corresponded to the half further from the recession. In the half closer to tooth #43, a total-thickness flap was raised by using a Molt periosteal elevator (Millennium, Golgran, São Paulo, SP, Brazil). Next, root planing was performed by finishing diamond burs (3195 F, KG Sorensen, Barueri, SP, Brazil) and Gracey curettes size 5/6 (Millennium, Golgran, São Paulo, SP, Brazil). The root was conditioned for two minutes with cotton pellet soaked in a solution of 100mg/ml tetracycline

hydrochloride /saline followed by copious irrigation with saline (figure 3) [17, 18].

Subepithelial connective tissue graft was harvested from the palate, between upper second bicuspid and first molar (figure 4), and sutured on the receptor area with absorbable suture (Vycryl 5.0, Johnson & Johnson, São José dos Campos, SP, Brazil) underlying to the gingival tissue close to the recession (figure 5). Following, the flap was laterally positioned on the subepithelial connective tissue graft, completely covering it, and sutured with silk thread 4.0 and protected by surgical cement (figure 6). Patient was oriented to take 500 mg amoxicillin (1 tablet every 8 hours, for 7 days), 100 mg nimisulide (1 tablet every 12 hours, for 3 days), 500 mg Dypirone sodium (40 drops every 6 hours, while in pain) and 0.12% chlorhexidine gluconate mouthwash (twice a day for 14 days).

After seven days, sutures were removed and the surgical cement was changed [4]. At 12-month follow-up, we observed root's total coverage and lack of dentin hypersensitivity (figure 7), which considerably favored patient's oral hygiene.

Figure 1 – Initial clinical aspect of a Miller class I in tooth #43, with presence of bridle insertion at the most apical portion of the gingival margin

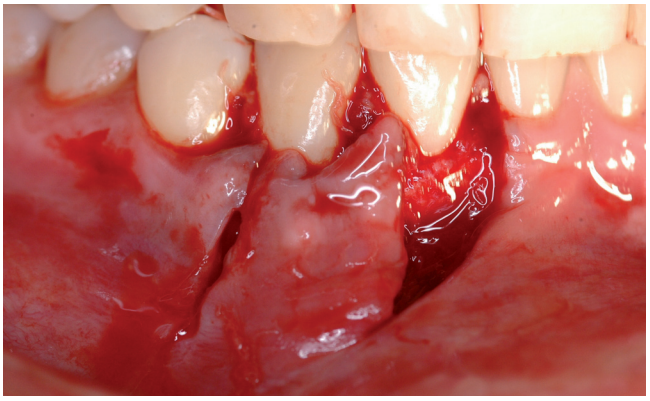

Figure 2 – Trans-operative aspect of pedicle double flap

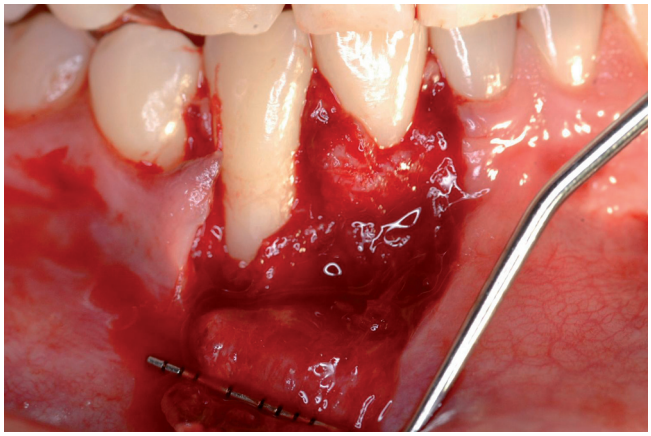

Figure 3 – Root surface of tooth #43 prepared and conditioned by curettes and tetracycline hydrochloride, respectively

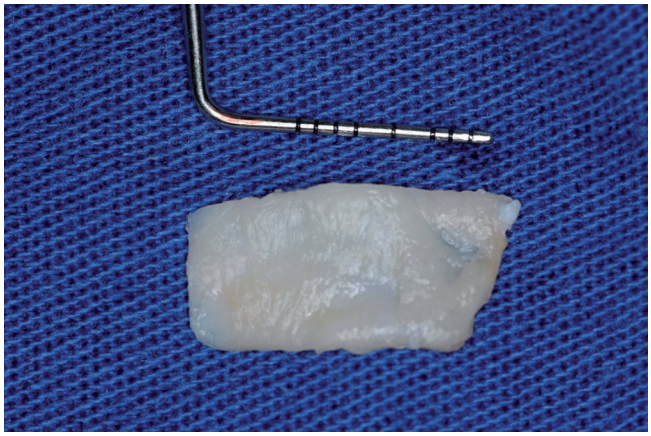

Figure 4 – Subepithelial connective tissue graft harvest from palate

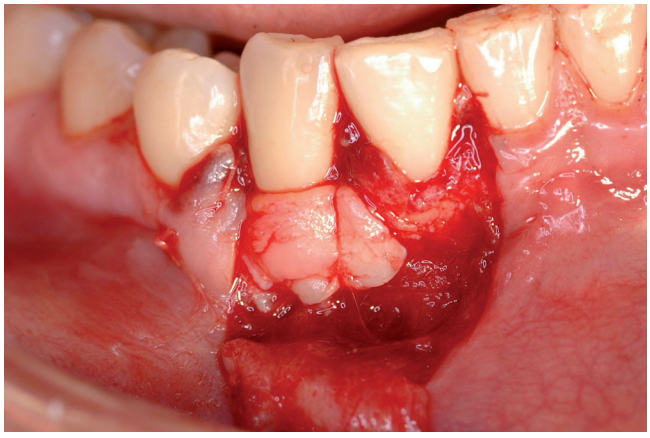

Figure 5 – Subepithelial connective tissue graft sutured on receptor area with absorbable suture underlying to the gingival tissue closer to the recession

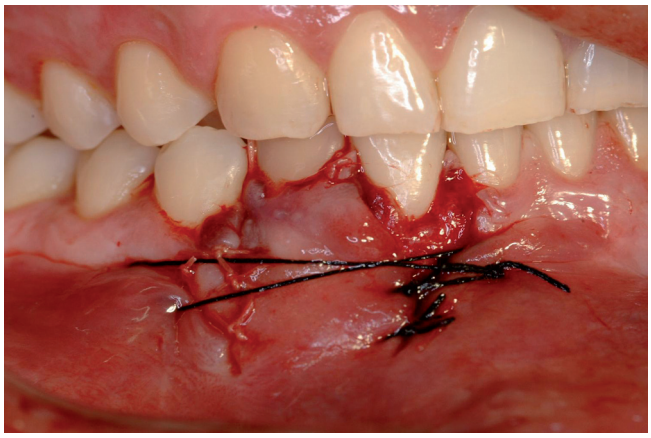

Figure 6 – Flap laterally positioned over the subepithelial connective tissue graft, completely covering it, maintained with silk thread 4.0

Figure 7 – Postoperative12-month follow-up

Discussion

Root coverage procedure success depends on several factors: elimination and control of its aetiology [1], interproximal bone level, and choice of the best coverage technique specifically to each clinical situation of the area to be treated [8].

In this case report we choose the technique of laterally positioned double flap described by Parkinson *et al.* [14] because of the good periodontal conditions of the neighboring area showing a large keratinized gingiva band and normal bone height. Considering these aforementioned clinical features, LPF technique is more advantageous than other root coverage techniques, e.g. coronally positioned flap, which would depend on previous creation of apical keratinized gingiva for performing root coverage [2, 12], and would require two surgical procedures.

Subepithelial connective tissue graft technique, although using two donor areas, was employed because it shows a higher success rate when compared to other techniques [8], both for sound and carious teeth, restored or not [7].

In this case report, the root underwent scaling with periodontal curettes and treatment with hydrochloride of tetracycline (100mg/ml saline) for two minutes. This solution reacts with tooth hard tissues and acts as a long-lasting antimicrobial agent slowing biofilm formation and diminishing the collagenolytic activity of bacterial endotoxins [5, 8].

Technical details should also be observed to reach the best aesthetic outcome as well as a high rate of root coverage. The bevel inversions of the flap and receptor area borders, described by Bosco *et al.* [3] was used to allow a better wound borders adaptation at the suture moment, avoiding the flap superposition over the receptor site and diminishing the healing incision line. The association of the surgical techniques in addition to the technical requirements has contributed to higher rates of root coverage with improved aesthetic and long-term results [11].

Conclusion

Based on the results obtained, it can be concluded that the subepithelial connective tissue graft associated with LPF contributed to the full root surface coverage and keratinized tissue band increase. Patient was highly satisfied with the treatment outcome and no longer complained about dentin hypersensitivity when brushing after the surgical intervention.

References

1. Ando K, Ito K, Murai S. Improvement of multiple facial gingival recession by non-surgical and supportive periodontal therapy: a case report. J Periodontol. 1999 Aug;70(8):909-13.

2. Bernimoulin JP, Luscher B, Mulherman HR. Coronally repositioned periodontal flap. J Clin Periodontol. 1975 Feb;2(1):1-13.

3. Bosco AF, Milanezi LA, Passanezi E. Contribuição à técnica de recobrimento de raízes expostas. Rev Reg Assoc Paul Cir Dent Araçatuba. 1989/1990;10(11):9-12.

4. Carvalho JCM, Pustiglioni FE. Correção cirúrgica das retrações gengivais localizadas: detalhes técnicos. **Ars Cvrandi Odontol. 1974;1:6-15.**

5. Claffey N, Bogle G, Bjorvata KA, Egelberg J. Topical application of tetracycline in regenerative periodontal surgery in beagles. **Acta Odontol** Scand. 1987 Jun;45(3):141-6.

6. Glise JM, Monnet-Corti V. Enxerto de conjuntivo utilizando a técnica do envelope. In: Borghetti A, Monnet-Corti V. Cirurgia plástica periodontal. Porto Alegre: Artmed; 2002. p. 238-45.

7. Goldstein M, Nasatzky E, Goultschin J, Boyan B, Schwartz Z. Coverage of carious roots by a subepithelial connective tissue graft. Am J Dent. 2002 Jun;15(3):143-8.

8. Greenwell H, Bissada NF, Henderson RD, Dodge RJ. The deceptive nature of root coverage results. J Periodontol. 2000 Aug;71(8):1327-37.

9. Grupe HE, Warren R. Repair of gingival defects by a sliding flap operation. J Periodontol. 1956;27:92-5.

10. Langer B, Langer L. Subepithelial connective tissue graft technique for root coverage. J Periodontol. 1985 Dec;56(12):715-20.

11. Martins TM, Fernandes LA, Bosco AF, Almeida JM, Garcia VG. Enxerto de tecido conjuntivo subepitelial associado ao retalho posicionado lateral: uma opção terapêutica periodontal com excelente potencial estético. **Periodontia. 2006** Sep;16(3):40-4.

12. Milinek A, Buchner A, Smukler H, Begleiter A. The use of grafts in periodontal surgery I. The utilization of free gingival grafts in the treatment of mucogingival defects. Refuat Hapeh Vehashinayim. 1973 Apr;22:55-62.

13. Nelson SW. The subpedicle connective tissue graft. A bilaminar reconstructive produce for the coverage of denuded root surfaces. J Periodontol. 1987 Feb;58(2):95-102.

14. Parkinson WM, Richards MA, Davies WIR. A modified technique for the laterally repositioned flap. **Apex. 1971 Mar;5(2):51-2.**

15. Saito CTMH, Martins TM, Bosco JMD, Bosco AF, Bernabé PFE. Retalho posicionado lateral: uma alternativa estética para o recobrimento radicular. Revisão de literatura e relato de caso clínico. ROBRAC. 2005;14(37):69-73.

16. Staffileno H. Management of gingival recession and root exposure problems associated with periodontal disease. **Dent Clin North Am. 1964;111-20.**

17. Terranova VP, Franzetti LC, Hic S, DiFlorio RM, Lyall RM, Wikesjö UM et al. A biochemical approach to periodontal regeneration: tetracycline treatment of dentin promotes fibroblast adhesion and growth. J Periodontol Res. 1986 Jul;21(4):330-7.

18. Wikesjö UM, Claffey N, Christersson LA, Franzetti LC, Genco RJ, Terranova VP et al. Repair of periodontal furcation defects in beagle dogs following reconstructive surgery including root surface demineralization with tetracycline hydrochloride and topical fibronectin application. J Clin Periodontol. 1988 Jan;15(1):73-80.