

Semilunar Coronally Repositioned Flap for the Treatment of Gingival Recession with and without Tissue Adhesives: A Pilot Study

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Abstract:

Statement of problem: One of the main goals in periodontal therapy is the correction of recession defects; therefore the efficacy and predictability of the various techniques are important considerations for clinicians.

Purpose: The purpose of this pilot study was to compare the outcomes of gingival recession therapy using the semilunar coronally repositioned flap (SCRF) alone and in conjunction with a tissue adhesive (EPIGLU).

Materials and Methods: Thirty-two anterior and premolar teeth with class I and II Miller gingival recessions were selected and randomly divided into two groups. The test group received SCRF followed by EPIGLU application and the control group was managed with SCRF alone. Clinical parameters measured at baseline and 7, 14, 30 and 90 days after surgery included vertical and horizontal recession depths, width of keratinized tissue, probing depth, clinical attachment level, percentage of root coverage, and sensitivity of root surface to air flow.

Results: The recession depths decreased significantly in both groups ($P < 0.05$). Three months after surgery, the mean root coverage in the test and control groups was 1.86mm (77.96%) and 1.57mm (69.1%), respectively. The width of keratinized tissue along with all the other tested parameters except for probing depth, increased significantly in both groups, during the study period ($p < 0.05$). Sensitivity of root surface to air flow was not observed in either group.

Conclusion: The SCRF alone or with EPIGLU is an effective procedure for root coverage in anterior and premolar teeth. The addition of EPIGLU improves the amount of root coverage, especially in relatively shallow defects.

Key words: Gingival recession; Semilunar coronally repositioned flap; Tissue adhesive; EPIGLU.

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INTRODUCTION

Gingival recession is characterized by the loss of periodontal connective tissue fibers along with tooth cementum and alveolar bone [1]. The causes of gingival recession are periodontal disease, improper oral hygiene, frenal pull, bone dehiscence, improper resto-

rations, tooth malposition, viral infection of gingiva and subgingival calculus formation [2,3]. Gingival recession is significantly more common among smokers [4]. Recession of the gingival tissue may cause root hypersensitivity, poor esthetic appearance and cervical root caries [5]. Many surgical

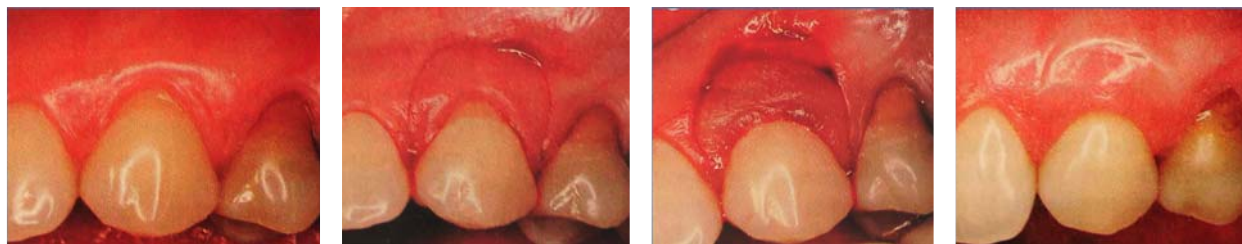


Fig. 1: Semilunar Coronally Repositioned Flap Technique (Order: left to right)

approaches have been used to achieve root coverage including free gingival grafts, pedicle flaps such as semilunar coronally positioned flaps, and guided tissue regeneration (GTR) [6,7]. The tissue adhesive (EPIGLU) was first introduced by Cover et al in 1959 [8]. Basker et al [9], in 1968, used cyanoacrylate adhesive material in the rabbit tongue for clinical and histological studies and in another study he used the same material in periodontal and oral surgery. EPIGLU is a tissue adhesive that has been approved by the FDA [10]. The objective of this study was to clinically evaluate the use of semilunar coronally repositioned flap (SCRf) in association with tissue adhesives (EPIGLU) to cover buccal gingival recession defects compared to SCRf alone.

MATERIALS AND METHODS

Thirty-two anterior and premolar teeth from 8 patients (4 female and 4 male) with the; average (SD) age of 39(7) years with Miller class I and II gingival recession were selected from those referred to the School of Dentistry, Ahwaz University of Medical Sciences, during Feb 2005 to June 2005. Informed consents were obtained from each of the participants after thorough explanation of the risks and benefits of the clinical procedures. The Ethical Committee of the University approved the study protocol and consent form. All subjects were non-smokers who were periodontally and systemically healthy with no contraindications for periodontal surgery. The patients were randomly divided into two groups and received semilunar coronally repositioned flaps (SCRf) according to the method

described by Tarnow [11]. The recession sites were surgically covered with a SCRf alone in the control group, or a SCRf followed by application of tissue adhesive (EPIGLU, Meyer-Haake, Germany) in the test group. For the control group, the flap was advanced as coronally far as possible without tension and positioned properly (Fig. 1). A moist gauze pad was placed with light pressure perpendicular to the flap at its new level for 5 minutes. In the test group, an adhesive material (EPIGLU) was applied in the coronal section of the flap to keep it in the new position (Fig. 2). At baseline, the following measurements were recorded at each recession site using a Williams probe (HU-Friedy, Germany); vertical and horizontal recession depths, width of keratinized tissue, probing depth, clinical attachment level (CAL) and root coverage percentage. Sensitivity of root surface to air flow was also measured. The patients were visited at 7, 14, 30 and 90 days post-surgery to observe the healing process. Data were analyzed using t-test ($p < 0.05$).



Fig. 2: The application of EPIGLU to keep the flap in the new position

RESULT

The mean root coverage was 77.96% in the test group and 69.1% in the control group during the three-month study period.

The mean and standard deviation (mm) of the studied variables in both groups, before and one and three month after surgery are shown in Table I.

As it has been illustrated in Tables I, the two groups were homogenous at baseline for all parameters. No significant difference was found between the test and study groups before and one month after treatment. Probing depth was the only variable to remain unchanged before and 3 months after treatment. All studied parameters, except for probing depth, revealed a significant difference among the test and control groups one month and three months after surgery. No sensitivity of root surface to air flow was observed among the test and control group.

DISCUSSION

The objective of this pilot study was to compare the use of SCRF with and without EPIGLU for the treatment of buccal gingival recession. The data indicated that the two

surgical approaches adopted in the present study were highly effective and predictable in obtaining root coverage of gingival recession which is in accordance with previous reports. During the 3-month study period of the current investigation, both techniques showed root coverage of 77.96% and 69.1% for the test and control groups, respectively ($P < 0.05$). A significant difference was observed in the studied parameters including recession depth (RD), recession width (RW), width of keratinized tissue (KT) and clinical attachment level (CAL), between the test and control groups, 3 months post-surgery ($P < 0.05$).

Probing depth was the only variable that did not show significant difference between the groups, during the study period ($P < 0.05$). No sensitivity of root surface to air flow was observed among the test and control groups. The decision to use the SCRF technique as designed by Tarnow [12], was dependent on factors related to height and class of gingival recession and the conditions of keratinized tissue (width and thickness). SCRF was designed to cover minimal (1-3 mm) gingival recessions [13-15]. However, in the present study, this procedure was extended to gin-

Table I: The mean and standard deviation (mm) of the studied variables in both groups, before and after surgery

Parameter	Group	Mean (SD) before treatment	Mean (SD) one month after treatment	Mean (SD) 3 month after treatment	P-value
Recession depth	Test	2.32 (0.46)	0.82 (0.32)	0.32 (0.22)	0
	Control	2.38 (0.58)	1.35 (0.29)	0.81 (0.24)	0
Recession width	Test	1.96 (0.56)	0.91 (0.28)	0.56 (0.36)	0
	Control	2.01 (0.54)	1.25 (0.33)	0.97 (0.22)	0
Width of keratinized tissue	Test	3.64 (0.81)	5.1 (0.44)	5.65 (0.52)	0
	Control	3.61 (0.91)	4.5 (0.58)	5 (0.58)	0
Width of attached gingival	Test	2.68 (0.95)	4.38 (0.63)	5 (0.64)	0
	Control	2.45 (0.92)	3.72 (0.79)	4.22 (0.79)	0
Probing depth	Test	0.96 (0.29)	0.71 (0.21)	0.64 (0.19)	0.1
	Control	1.03 (0.33)	0.78 (0.25)	0.78 (0.25)	0.1
Clinical attachment level	Test	3.38 (0.71)	1.53 (0.43)	0.97 (0.38)	0
	Control	3.40 (0.74)	2.13 (0.48)	1.6 (0.44)	0

gival recession with a mean keratinized tissue width of 2.68 mm in the test group and 2.24mm in the control group. The current study revealed a significant difference in the width of gingival recession in both groups. The mean recession width (RW) after 3 months was 0.56 mm in the test group and 0.97 mm in the control group. The results of the test group are slightly superior to that of the control group, which is probably due to the application of the tissue adhesive EPIGLU and flap fixation.

CONCLUSION

The use of SCRF followed by the application of EPIGLU is an effective procedure for root coverage in anterior and premolar teeth, especially in relatively shallow defects

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