

When Gingival Recession Is Rescued By Periodontal Plastic Surgery: A Clinical Case Report

Rahim O

Department of Dentistry, Faculty of Medicine, Mustapha University Hospital Centre, Algeria.

*Corresponding author

Rahim Omar, Doctor at Periodontology Service - Mustapha University Hospital Centre, Algiers University Youcef Benkhedda Faculty of Medicine, Medical Dentistry Department, Algiers, Algeria, E-mail: rahimo.moon@yahoo.fr.

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Summary

Gingival recession is the most common mucogingival defect. It is characterized by the exposure of the tooth root surface resulting from displacement of the gingival margin below the cemento-enamel junction. The denuded root surfaces compromise dental and gingival aesthetics with dentine hypersensitivity, caries proclivity, cervical abrasion and oral hygiene disability.

When deciding root coverage, settled surgical techniques have been proposed and each procedure challenges to expand on limitations of the others.

The purpose of this case report is to assess the esthetic correction of localized gingival recession using combined coronally positioned flap with connective tissue graft techniques. Long term evaluation, extended to two years after surgical treatment, is performed. The part of the prophylactic management to prevent potential future recessions is also enhanced.

Significant increasing in keratinized and attached gingival tissues and reduction of height and width of recession were obtained. Gain of root coverage was 100% with great improvement in attachment level. Prevention of recession was accomplished and the results were stable after two years follow up. Patient-reported outcomes were satisfaction and esthetic appearance.

Keywords: Gingival recession, Surgery, Periodontics, Miller Class I, Esthetic, Prophylaxis.

Introduction

Gingival recession is the exposure of the tooth root surface resulting from displacement of the gingival margin below the cemento-enamel junction. In this condition, erosion of the cementum exposed leaves an underlying dentinal area that can be extremely sensitive and interfere with normal hygiene procedures, leading to increased plaque accumulation and increased risk of further recession. Deep enamel/root discrepancies will be susceptible to caries [1-4]. In addition to this clinical significance, compromised esthetics makes patients seek help looking for restorative options [56].

Regarding the etiopathogenesis, gingival abrasion by frictional injury due to scratching of gingival with abnormal tooth cleaning is considered to be the predominant cause for the development of recessions, particularly in young individuals, while gum disease because of plaque build-up and periodontitis may be the primary etiology in older adults. Other factors that can predispose to gingival recession include anatomic variations (high frenal attachment, lack of keratinized gingiva, tooth malposition, prominent root, muscle insertion close to gingival margin, thin alveolar bone and absent vestibular table), smoking, dental restorative or orthodontic treatments [1, 5, 7-9].

The incidence of gingival recession fluctuates between 6.3 and

100% depending on age and increases with age [10]. In 1800 Indian school kids aged 10-15 years; this defect is present in 18% with no differences by age and gender but significantly associates with thin variety of frenal attachment [11]. According to a 20-year longitudinal study consisted of 565 Norwegian male between 15 and 30 years of age and 480 Sri Lankans male between 15 and 30 years of age, gingival recession occurred in 65% by the age of 22 years. In contrast, by 30 years of age more than 75% of Norwegian and 90% of Sri Lankans had one or more sites with gingival recession and at these ages only 16% and 22% of buccal surfaces showed recession between 1-2 mm [12]. In a large population of over 30 thousand American people, the prevalence of gingival recession was 23% with 10% frequency in the age group of 30-39 years and over 60% in the group of 80-90 years [13].

Root coverage therapy includes many periodontal plastic surgery procedures; coronally or laterally advanced flap, double papilla flap, free gingival graft, sub-epithelial connective tissue graft and techniques using Acellular Dermal Matrix, Enamel Matrix Derivatives, Platelet Rich Fibrin, Platelet Rich Plasma, Living Cellular Construct, and guided tissue regeneration [14, 15]. The selection of the surgical techniques is dependent on a number of factors. These include experience, patient desired outcome, and the anatomy of the defect site, such as the size of the recession defect, the presence or absence of keratinized tissue adjacent to the defect, the width and height of the interdental soft tissue, and the depth of the vestibule or the presence of frenula [15].

The purpose of this case report is to illustrate the predictability of the combined coronally positioned flap with connective tissue graft procedures in root coverage of Miller Class I gingival recession about patient followed up for two years;

Case description

A 15-year old male patient was presented at our periodontics consultations at Mustapha Algiers University Hospital Center with chief concerns of unsatisfactory esthetics because of receding gums in her mandibular front tooth #13, feeling pain when brushing and sensitivity to thermal changes in the same tooth. He stated that the recession had only recently occurred (six months) with localized root sensitivity and that it has increasing. No previous periodontal treatment was reported.

His general health condition was good, did not take any medications, had no known allergies and was a nonsmoker.

Clinical evaluation revealed Miller's Class I gingival recession [16] in relation to the tooth #13, extending 3mm apical to the Cemento-enamel junction. Attached gingiva was present between marginal gingiva and mucogingival junction. No plaque accumulation was detected in the affected site. There was no gingival recession associated with adjacent teeth (Figure 1). There was no loss of interdental bone and soft tissue papillae covering interproximal bone at full height. The patient was evaluated for the following clinical parameters; gingival recession depth, width of attached gingiva and gingival biotype thickness, at baseline, 8 and 12 months. These parameters revealed that tooth #13 showed gingival recession with 1,8 mm thick gingival biotype while keratinized gum was 2,5 mm. Abnormal and aggressive brushing was the possible cause of recession.



Fig1: Miller's Class I gingival recession on #13. No plaque accumulation in the affected site. No gingival recession associated with adjacent teeth.

We explained the diagnosis and suggested treatment plan in detail to the patient and his parents. To restore harmonious appearance of the gingiva by covering the root surface and to increase harness of attached gingiva in this clinical case, the combined coronally positioned flap with connective tissue graft procedures offered the best option.

Informed consent has been explained to the patient and signature was obtained, in accordance with the Helsinki Declaration of 1975, as revised in 2000 [17].

Two weeks before surgery full-mouth scaling and polishing were performed. Instructions were given regarding oral hygiene,

brushing technique and a use of a soft brush. After re-evaluating the hygiene phase and after verifying the absence of periodontal activity (Figure 2) surgery was performed (Figure 3).

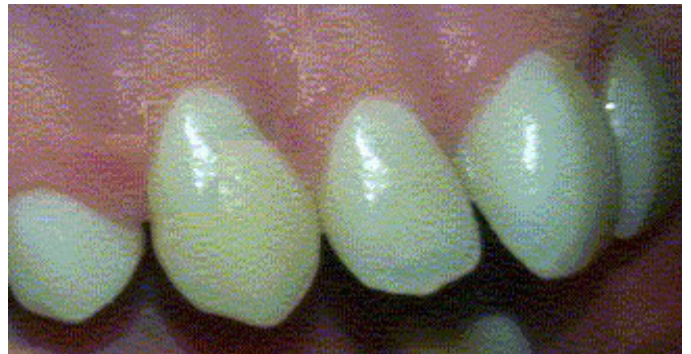


Fig 2: Presurgical view: marginal tissue recession not extending to the mucogingival junction. No loss of interdental bone or soft tissue.



Fig 3: Periodontal surgery instruments tray.

Under local anesthesia of both recipient site and the palate, which acts as the donor site, a split thickness flap with two vertical releasing incisions was prepared at the recipient site to produce a periosteal bed that will provide the blood supply to the graft tissue. The exposed root was irrigated with saline. A connective-tissue graft was dissected from the palate of appropriate dimension to match the recession defect (Figure 4 & 5). The graft was sutured on the recipient site and pressure applied for 5 minutes. The flap was repositioned over the graft to cover it completely; 2 mm above the cemento-enamel junction was used (Figure 6).

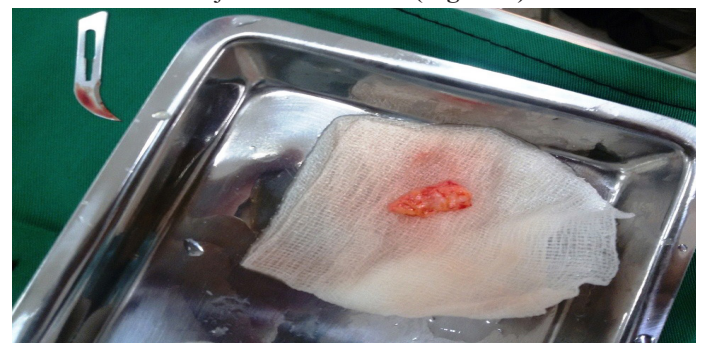


Fig 4 : A connective-tissue graft taken from the palate.



Fig 5: Palatal donor site sutured.



Fig 8: Tooth #13 after 10 days of postoperative healing. Papillae normal in size and shape.



Fig 6: Gingival flap coronally repositioned over the connective tissue graft and secured with sutures.



Fig 9: Palatal donor site after 10 days healing.

The patient is given advice regarding analgesia, which will be needed for the first 48 hours particularly for the palatal site. The patient was advised not to use a tooth brush at the operative sites until was prescribed Chlorhexidine oral rinse twice a day.

The review appointment was one week of healing (**Figure 7**). The sutures were removed 10 days after the procedure. No complications were found on any of the surgical sites recipient (**Figure 8**) and donor (**Figure 9**) sites. Significant increasing in keratinized and attached gingival tissues and reduction of height and width of recession were obtained. Gain of root coverage was 100% with great improvement in attachment level (**Figure 10**). The results were stable after two years follow up (**Table1**). Gingival texture was normal, mucogingival junction was aligned with the mucogingival junction of adjacent teeth, an accurate gingival contour following a normal cementoenamel junction and perfect color match with adjacent soft tissue were assigned (**Figure 11**). Patient-reported outcomes were satisfaction, positive effect on dentinal hypersensitivity and esthetics.



Fig 10: Postsurgical view following 8 months healing. The gingiva has a healthy and esthetic appearance.



Fig 7: Postsurgical view after 1 week healing. Complete root coverage and intact papillae



Fig 11: Long-term stable root coverage provided at 2 years of postoperative healing

Table 1: Clinical parameters followed

Patient	Tooth # 13 : Miller Class I gingival recession		
	Baseline	8 months	2 years
Recession depth (mm)	3	0	0
Width of attached gingiva (mm)	2	5	5
Gingival biotype thickness (mm)	1,8	2,5	2,5
% Root coverage	--	100	100

Discussion

Gingival recession management requires attentive evaluation and adequate planning to gain a favourable clinical outcome and finest esthetic correction. Regarding our patient, the figure 12 summarises the protocol adapted from the first consultation to the final follow-up (2 years postsurgery). As seen in the periodic check-ups, the patient has approved good hygiene practices contributing certainly to the positive outcomes attained.

Covering gingival recessions emphasizes the suitable surgical procedure in light of many considerations. It is decisive to consider the type of recession, quantity and quality of keratinized tissue, tooth position in the arch, flap type, degree of bone loss and root coverage reported in the literature [14,15, 18,19]. In our practices, to achieve predictable results we restrict the combination of coronally positioned flap and connective tissue graft to cases where the gingival biotype is thick and there is sufficient amount of keratinized tissue adjacent to the recession defect. In cases presenting thin gingival biotype or limited keratinized tissue it may be more sensible to consider a free graft, possibly in combination with a pedicle graft.

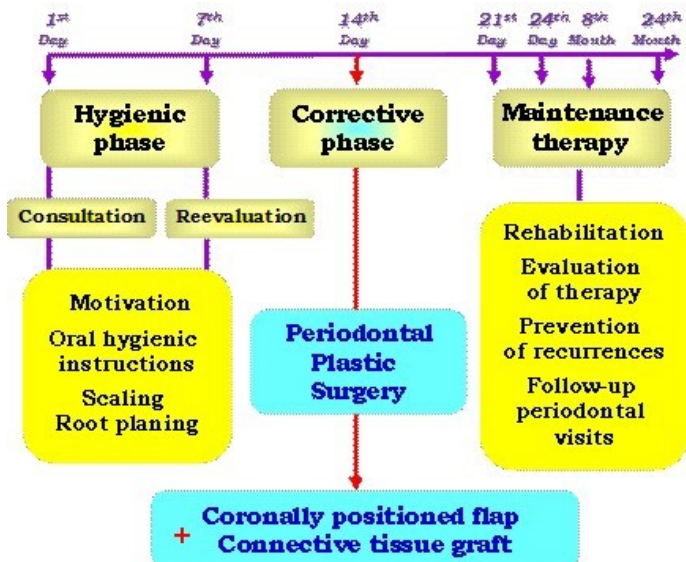


Figure 12- Lines of our treatment protocol

In this study, two different surgical procedures were used: a connective tissue graft and a coronally advanced flap, in single-stage.

The free gingival graft was introduced in 1902 [20,21]. Sullivan and Atkins first described its feasibility to achieve root coverage on the denuded root surfaces [22]. Langer and Langer were first to obtain positive results and to report the use of connective tissue graft for gingival recession therapy for both single and multiple adjacent teeth [23].

The advantage of connective tissue graft is that the defect coverage can be achieved with less donor tissue since revascularization occurs from both the periosteal base and the partial-thickness. In addition, overlying flap ensures an excellent colour match with adjacent soft tissues [14, 23].

This technique has been established as a highly effective means of covering recession defects. Studies show mean defect coverage ranging from 57% to 98% with a mean for all studies of 84% [14, 18].

The coronally positioned flap is a pedicle soft tissue graft with vertical movement in the coronal direction. This technique has been first reported by Bernimoulin et al. This was a two-stage procedure. In the first stage, a free gingival graft was placed apical to the margins of the recession to be treated. The second stage occurred a few months later, when the graft was coronally positioned over the denuded root surfaces [24]. In 1989, Allen and Miller reported the use of a single-stage coronally positioned flap in the treatment of shallow marginal recessions [25].

This surgical approach is commonly used under defined conditions: shallow recession of ≤ 4 mm, Miller Class I recession, keratinized tissue width ≥ 3 mm, and gingival thickness of ≥ 1 mm [25]. Studies show mean defect coverage ranging from 50% to 98% with a mean for all studies of 78%. [14, 18,25]. In the current case report, 100% root coverage was achieved with results consistent even after 2 years.

Conclusion

In the limitation of the presented case, this study suggests that for Miller Class I single-tooth recession defects highly predictable root coverage is possible when applying coronally positioned flap and connective tissue graft procedures in single-stage.

Therefore, patient motivation and compliance contributed certainly to the positive outcomes attained.

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