

## TWO-STEP SURGICAL PROCEDURE FOR ROOT COVERAGE (FREE GINGIVAL GRAFT AND CORONALLY POSITIONED FLAP)

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### SUMMARY

**Background:** Gingival recessions require treatment for many reasons – impaired aesthetic appearance, root sensitivity, cervical caries or abrasion. Two surgical techniques have been described that use free gingival graft for root coverage. The technique proposed by Bernimoullin et al. involves two surgical steps. The first step consists of creating attached gingiva by means of free gingival graft and second – coronally positioning of grafted tissue to cover the gingival recession. This indirect technique has advantages over other techniques because ensures development of an adequate band of attached gingiva. The minimal recommended healing period before second surgery is 8 weeks.

**Case report:** This case presents a 50-years old man with gingival recessions up to 6 mm on #34 and #44 (class II according to Miller classification). Before surgery full-mouth scaling and polishing were performed and oral hygiene instructions were given. Recession height, width, probing depth, clinical attachment level, keratinized and attached gingiva were measured at baseline and six months post surgery.

**Results:** Eight months after treatment there were significant increasing in keratinized and attached gingival tissues and reduction of height and width of recession (mean gain of root coverage was 91,67% and 90.91%) and great improvement in attachment level.

**Conclusion:** These results suggest that two-stage surgical procedure is highly predictable for root coverage in case of deep recession and lack of attached gingiva.

**Key words:** free gingival graft, gingival recession, periodontal plastic surgery, root coverage

Gingival recessions are defined as displacement of gingival margin from the cementoenamel junction. The major causes of gingival recessions are genetically determined morphologic peculiarity (bone dehiscence and fenestration, the width and thickness of attached gingival, coronally attached frena), improper oral hygiene and periodontal disease (1, 2, 3, 4, 5, 7, 11, 12).

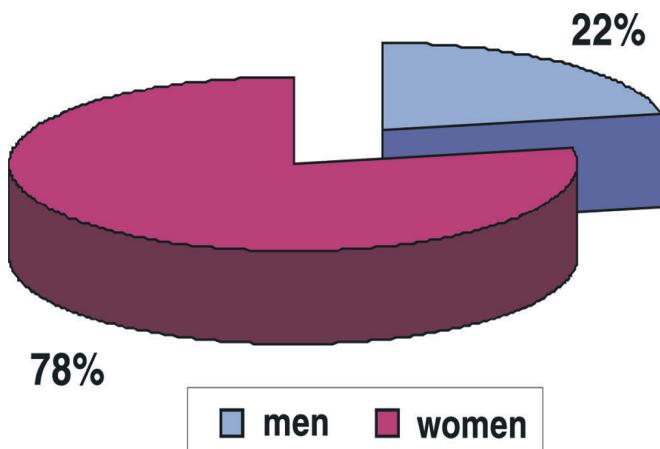
Presence of gingival recession and gingival inflamma-

tion in areas with a lack or narrow band of attached gingiva is identified as a mucogingival problem. Periodontal plastic surgery procedures are performed to resolve these mucogingival problems. Various clinical studies have evaluated many surgical techniques for root coverage: rotational flaps; advanced flaps; free gingival grafts; connective tissue grafts; guided tissue regeneration and a combination of these procedures (10). Mean root coverage of 70- 80% for the treated groups is reported but there is many factors that influence for success or the failure in every individual case. Choice of technique depends basically of defect size (Miller classification) (6), localization in esthetic zone and the need of augmentation of attached gingival tissues (7, 8, 9, 10). Free gingival graft followed by coronally positioned flap (two-step procedure) (1, 2) is preferred in case of deep and wide recession and a lack of attached gingiva.

The aim of this case report is to demonstrate that two-step surgical procedure is suitable and successful in areas with a lack of attached gingiva.

### Case report:

This case presents a 50-years old man with buccal gingival recessions Miller Class II (6 mm) in area of #34 and #44.



**Fig. 1. 30. 10. 05** - The initial status of the patient – Class Miller II gingival recessions of #34 and #44



**Fig. 2.** Clinical view of the recessions – note the lack of attached gingiva

#### CLINICAL PARAMETERS:

All measurements were recorded at baseline and 6 month after surgery with calibrated probe (CP12).

**Table 1.** Clinical parameters at baseline

Mesurements	#34	#44
Recession height (RH)	5,5 mm	6,0 mm
Recession width (RW)	5,0 mm	5,0 mm
Probing depth (PD)	1,0 mm	1,0 mm
Wide of attached gingiva (WAG)	0,0 mm	0,0 mm
Wide of keratinized gingiva (WKG)	1,0 mm	1,0 mm
Clinical attachment level (CAL)	6,5 mm	7,0 mm

Four weeks before surgery full-mouth scaling and polishing were performed and oral hygiene instructions were given to eliminate habits related to the etiology of the recession. The exposed root surfaces present significant loss of hard tissue because of aggressive tooth brushing. The patient was instructed to perform non-traumatic brushing technique. Hygiene index (HI- O'Leary et al. 1972; Lindhe 1983) and papilla bleeding index (PBI - Saxon & Muhlemann 1975) were used to assess gingival health.

#### Surgical protocol:

##### First step – free gingival graft

The surgical procedure was identical in both treated sites.

Following administration of local anesthesia (Ultracaine D-S) and intraoral desinfection with 0.12 chlorhexidine mouthrinse the exposed root surface was planed with finishing burs to remove grooves and to reduce the convexity of the most coronal portion of the root.

The first surgical phase involves preparation of the recipient bed apical to recession area. A horizontal incision was made with scalpel № 15 along the mucogingival junction extended one tooth medially and distally from affected area. Using sharp dissection connective tissue and muscle fibers are carefully dissected away from the periosteum. The

gingival margin of the vestibular mucosa was fixed to the periosteum using resorbable sutures. Free gingival graft was harvested from the palate and was adapted into recipient bed. The free gingival graft was secured using atraumatic sutures and sharply curved needle (4-0).

Post surgery plaque control was performed with CHX rinse. Healing was completed about six weeks later. There was significant augmentation of attached gingival and some reduction in the recession size.



**Fig. 3. 16. 01. 06 / 30. 10. 05** – Free gingival graft



**Fig. 4. 04.10.06 / 31.03.06** – gain of attached gingival

#### Second step – coronally positioned flap

After healing period the second step of surgical procedure was performed. The grafted tissue was positioned in coronally direction. The flap design was made by an intrasulcular incision and two oblique releasing incisions from medial and distal ends of the horizontal incision beyond the mucogingival junction. The full-thickness flap was reflected to expose bone dehiscence on the root at least 3 mm without involving adjacent papillae. The partial-thickness portion of the flap was extended apical so that it could be repositioned at the cemento-enamel junction without tension. The flap was repositioned slightly above CEJ and sutured.

Periodontal dressing was used for either technique (Coe-Pak).

Plaque control was performed weekly professionally and in addition CHX rinse 2 weeks post surgery; tooth brushing was avoided in surgical sites for the first 4 weeks.



**Fig.5. 04.10.06 / 31.03.06** – coronally positioned grafted tissues



**Fig.6. 16.03.07** – the achieved root coverage

#### RESULTS:

Eight months later clinical parameters were recorded. There were significant augmentation of wide of attached and keratinized gingiva. Root coverage was achieved in both sites respectively for #34 - 83% and for #44 - 91%.

**Table2.** Clinical parameters six months after surgery

Mesurements	#34	#44
Recession height (RH)	0,5mm	0,5mm
Recession width (RW)	0,0 mm	0,0 mm
Probing depth (PD)	1,0 mm	2,0 mm
Wide of attached gingiva (WAG)	6,0 mm	7,0 mm
Wide of keratinized gingiva (WKG)	7,0 mm	9,0 mm
Clinical attachment level (CAL)	1,5 mm	2,5 mm

**Fig. 7. 16.03.07** – final result of the treatment

#### DISCUSSION

This two-step surgical procedure was first described by Bernimoullin et al. 1975 (1) and was used in similar case when there are need for gingival augmentation.

The surgical procedure is simple, but survival of the graft depends on the re-establishment of blood supply in its new position. In early phase it is important to assure collateral circulation from the connective tissue bed bordering the defect (3).

Healing period of the graft is realized into tree phases: plasmic circulation phase (0-3 days); revascularization phase (4-11 days) and tissue maturation phase (12-42 days). The risk of failure of the grafts increases when it is placed over an avascular root surfaces in an attempt to achieve direct root coverage in deep and wide recession defects. Indirect technique is safety in such cases (1,2,6,7).

The cosmetic results of the FGG may not entirely be acceptable because in the FGG the donor tissue is usually harvested from the palate, which has a paler appearance than surrounding gingiva.

#### CONCLUSION

In the limitation of the presented case it is possible to conclude that the two-stage periodontal surgery for root coverage is a highly predictable procedure for augmentation of attached gingiva and root coverage.

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