

*Barros R, Novaes AB, Grisi M, et al. A 6-month comparative clinical study of a conventional and a new surgical approach for root coverage with acellular dermal matrix. J Periodontol 2004;75:1350-56. (29 Refs)*

**Purpose:** To clinically evaluate in humans the effectiveness of a modified surgical technique for root coverage with ADMG, based on an extended flap to favor the incorporation of the allograft, and to compare the proposed modification to the routinely used procedure.

**Materials and Methods:** 14 patients, (9♀,5♂), aged 22-46 yrs., without systemic disease, smoking habits; but having localized bilateral gingival recession in the same arch participated. Patients completed a plaque control program to exclude etiologies associated with recession. Each patient contributed a minimum of two contralateral teeth with Miller Class I or II buccal gingival recession  $\geq 3$  mm were randomly assigned to a test or control group. Both groups received treatment with an ADMG (used as a subepithelial connective tissue graft, SCTG). The control graft being placed with the technique established by Langer and Langer, (vertical releasing incisions placed on the proximal surfaces of the involved tooth), and the test group using the modified technique of an extended surgical flap (vertical releases displaced to the mesial and distal surfaces of the adjacent teeth). Clinical parameters measured were the following: 1) gingival recession, (GR); 2) probing depth, (PD); 3) relative clinical attachment level, (RCAL)-measured as a reference point from a stent to the bottom of the pocket; 4) width of keratinized tissue, (KT). All were assessed by one examiner at the mid-buccal position, using an automated probe (Florida probe). Schiller's iodine solution was used to determine gingival width of keratinized tissue. Surgical Procedures: All surgeries, both control and test, were performed by the same surgeon at the same appointment, using one of the two surgical techniques as mentioned above. Sulcular incisions around the treated tooth united the releasing incisions. Papillae were preserved in modified technique. Partial-thickness flaps were extended past MGJ to allow coronal tissue positioning over graft without tension. All root surfaces were planed with a curet and conditioned with 24% EDTA for 2 min. ADMG material were rehydrated according to manufacturer's instructions and trimmed to size and shape to cover exposed root surface and surrounding bone. Basement membrane side of ADMG was placed on bone. Both graft and flap was sutured in place using 5.0 resorbable sling sutures. Vertical incisions sutured with interrupted loops. A periodontal dressing was placed, changed at 7 days, and removed at 14 days. Post-operative protocol included: 1) antibiotic coverage for 7 days including 24 hrs. presurg.; 2) chlorhexidine rinses TID/15 days.; 3) No mechanical brushing in area for 14 days. 4) Suture removal at 14 days; 5) patient performed local deplaquing with chlorhexidine soaked cotton pellets 3x/day for 10 days; 6) 1,2 weeks followups, then 1x/month for 6 months for clinical exam, measurements, and professional hygiene.

**Findings and Conclusions:** Both techniques work, it appears the modified approach has a statistical significance in one category with some additional benefit to adjacent teeth.

**Mean Changes ± SD (mm) in Clinical Parameters Between Baseline and 6-Month Examinations**

Technique	Parameter			
	GR	KT	PD	RCAL
Conventional	2.1 ± 0.97	0.8 ± 0.75	0.1 ± 0.66	1.4 ± 0.98
Modified	3.6 ± 0.64	1.0 ± 1.04	0.2 ± 0.54	1.6 ± 0.96
Difference between techniques*	P = 0.002	NS	NS	NS

\* Mann-Whitney U test.

**Mean Changes ± SD (mm) of Clinical Parameters of Adjacent Teeth Between Baseline and 6-Month Examinations**

Technique	Parameter			
	GR	KT	PD	RCAL
Conventional	0.5 ± 0.57	0.1 ± 0.42	0.3 ± 0.62	0.5 ± 0.84
Modified	1.6 ± 0.98	0.6 ± 0.81	0.1 ± 0.60	0.9 ± 1.07
Difference between techniques*	P = 0.002	P = 0.001	NS	P = 0.022

\* Mann-Whitney U test.

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Difference between techniques*	P = 0.002	P = 0.001	NS	P = 0.022

\* Mann-Whitney U test.

*Zuccheli G, Cesari C, Amore C, Montebugnoli, et al. Laterally moved, coronally advanced flap: A modified surgical approach for isolated recession-type defects. J Periodontol 2004; 75: 173441*

**Purpose:** to evaluate the effectiveness of a modified surgical approach of the laterally moved flap procedure for treating isolated recession defects with respect to root coverage

**Materials and Methods:** A total of 120 systemic healthy patients with isolated recession type defects were selected for this study. Patients age range from 20-38 years. Patient smoking more than 20 cigarettes per day were excluded from the study. Inclusion criteria for this study was: Isolated defect ( no recession on the neighboring teeth); class I or II defects according to Miller ( no loss of interdental soft and hard tissue height); recession depth (RD) >2mm; lateral keratinized tissue width (KWT donor) at least 6mm greater than the with of the recession measured at the level of the CEJ and lateral keratinized tissue height (KTH donor) at least 2mm greater than the buccal probing depth (PD) of the adjacent tooth/teeth (PD donor). All patients received prophylaxis and OHI. Clinical measurements (PD, PD donor, CAL, KTH, KTH donor, and recession width), were taken 1 week before surgery and 1 year follow-up. Lateral modified surgical flap approach consisted of a modification of the coronal advancement of the laterally moved flap. The recipient area was delineated by three incisions a) A horizontal incision at the level of the CEJ; b) A vertical beveled incision parallel to the mesial gingival margin of the recession, extending into the alveolar mucosa; c) A beveled intrasulcular incision along the distal gingival margin of the recession defect and extending in alveolar mucosa up to the first vertical incision. The area was deepithelized providing a wide CT surface lateral and apical to the exposed root surface. The flap design consisted of three incisions; a) The beveled intrasulcular incision b) A horizontal submarginal incision extending in the mesial-distal direction 6 mm more than the width of the recession defect measured at the CEJ and c) A beveled oblique vertical incision extending into the alveolar mucosa, parallel to the first intrasulcular incision. The flap was elevated mixed thickness depending upon the thickness required for the central portion of the flap covering the avascular root surface. Once the mucoperiosteal line was reached the flap was extended split thickness. Flap reflection was terminated when it was possible to move the flap laterally over the exposed root surface passively. The root surface that was exposed was treated with curettes. The interdental papillae were deepithelized to create connective tissue beds to which the surgical papillae of the laterally moved flap were sutured.

**Findings and Conclusions:** Clinical parameters mean at baseline at post-surgery were:

	Baseline	1-year	Change
REC depth	4.4+ <sub>-1.2</sub>	0.2+ <sub>-0.5</sub>	.2+ <sub>-1.0</sub>
CAL	5.7+ <sub>-1.3</sub>	1.3+ <sub>-0.5</sub>	4.4+ <sub>-1.0</sub>
PD	1.3+ <sub>-0.5</sub>	1.2+ <sub>-0.4</sub>	0.1+ <sub>-0.6</sub>
KT donor	4.7+ <sub>-0.9</sub>	4.5+ <sub>-0.7</sub>	0.2+ <sub>-0.4</sub>
KT	0.4+ <sub>-0.5</sub>	2.6+ <sub>-0.6</sub>	2.2+ <sub>-0.7</sub>

At one 1-year evaluation, 97% of the root surfaces were covered with soft tissue and 96 defects (80%) showed completed root coverage. A significant increase in keratinized tissue was observed. These results were accomplished with no change in the position of gingival margin or the height of gingival tissues at the donor sites. The results of this study indicates that the laterally- positioned coronally advanced surgical approach was highly effective and predictable in obtaining root coverage of isolated gingival recession type defect. It combines the esthetic and root coverage advantages of the coronally positioned advanced flap with the increase in gingival thickness and keratinized tissue associated with the laterally positioned flap.

***Yotnuengnit A, Promsudthi A, Teparat T, et al. Relative Connective Tissue Graft Size Affects Root Coverage Treatment Outcome in the Envelope Procedure. J Periodontol 2004; 75; 886-92 (28 Refs).***

**Purpose:** To investigate the correlation between the connective tissue graft size and the percentage of root coverage.

**Materials and Methods:** A total of 15 patients (11 females and 4 males), who were referred for root coverage procedure to the Periodontal Surgical Clinic, Oral Medicine Department, Faculty of Dentistry, Mahidol University were selected for this study. Patient's age range from 19-52 years old. Criteria for patient' selection was a follows: 1- systemically healthy; 2- non-smoker; 3- non-pregnant; 4- not allergic to iodine; 5- no intake of medications known to affect the gingiva or interfere with wound healing and no contradictions for periodontal surgery. Patients need to have a least a one Miller Class I or II marginal tissue recession defect, > 2mm in depth, on a vital tooth without any restoration on the denuded root surface. Teeth included were 2 incisors, six canines and seven premolars. The following clinical parameters were measured: probing depth (PD); clinical attachment level (CAL); recession depth (RD); keratinized tissue width (KW); visible denuded area (VDA). Clinical parameters were measured for the mid- buccal aspect of each tooth at baseline, 3 and 6 months post-surgery. VDA and graft tissue area were measure indirectly by placing a foil on the tooth surface, foil was then flattened, digitally imaged, and the area of the foil in mm<sup>2</sup> was calculated using a computer software. Graft tissue thickness (GTT) and graft tissue width (GTW) were also measured. The surgical envelope tissue graft procedure was performed as follows: exposure of the root surface area was performed; root surfaces were SR/P and then treated with tetracycline-HCL solution. Recipient site was prepared using a slight modification of the Raetzke technique, without marginal tissue removal. The connective tissue graft, without epithelial collar, was the harvested from the palate and placed beneath the envelope flap, positioned at the CEJ to complete cover the recession defect. Periodontal dressing was placed. Measurements of RD, CAL, KW, PD and VDA were evaluated by Friedman test. The correlation between the percentage of root coverage (PRC) and factors related to graft size were determined by Spearman rank correlation and nonparametric regression analysis.

**Findings and Conclusions:** Clinical parameters means were:

	Baseline	3-months	6-months
RD mm	2-4	0-2	<b>0-3</b>
VDA mm <sup>2</sup>	3.7-15.6	0-6.15	<b>0-5.14</b>
CAL mm	3.5-5.5	1-3.5	<b>1-4</b>
KW mm	0-6	3-8	<b>3-8.5 (increased)</b>
PD mm	1-2	1-2	1-2

Graft tissue area showed a strong correlation with graft width ( $r=0.87$ ,  $P<0.01$ )  
Postoperative percentage of root coverage by area was 85.22% (3- month) and 89.32% (6-months) Percentage of postoperative root coverage by depth was 77.67%(3-months) and 78%(6-months). GTA: VDA ratio was  $P<0.01$ , it did not correlate with GTA, GTT, or RD, and was inconsistently correlated to GTW and VDA. In patients who gained a 100% root coverage (35.71% of patients), the GTA: VDA ratio was high (10.92:1 to 21.95:1). For this results could be concluded that the graft tissue area: visible denuded area ratio is one of the among several factors to be considered to maximize root coverage. It was suggest that graft tissue size should be at least 11 times greater than the visible denuded area.

*Woodyard JG, Greenwell H, Hill M et al. The clinical effect of acellular dermal matrix on gingival thickness and root coverage compared to coronally positioned flap alone. J Periodontol 2004;75:44-56. (91 Refs)*

**Purpose:** To compare the coronally positioned flap (CPF) plus an acellular dermal matrix (ADM) allograft to CPF alone. 2) to determine their effect on gingival thickness and percent root coverage.

**Materials and Methods:** Twenty-four subjects were treated, 12 with a CPF underlaid by ADM (ADM group) and 12 with a CPF alone (CPF group). The study population included 14 women and 10 men, with an average age of 34 years. Each patient provided one site with a Miller class I or II facial recession defect of  $\geq 3$ mm. Subjects were randomly selected to receive either the test or the control treatment. Presurgical preparation included detailed OH, SC/RP, and occlusal adjustment, if indicated. Baseline data included: Miller's classification of recession, PI, GI, BOP, PD, recession, CAL, mobility, keratinized tissue width, soft tissue thickness with the ultrasonic SDM gingival thickness meter at the sulcus and MGJ; and clinical photographs. All subjects were seen weekly for 4 weeks, then every 2 weeks until week 8, and then every 2 months until the end of the study. 8 weeks was considered baseline for the evaluation of creeping attachment until the end of the study. At the end of the 6-month evaluation, the same clinical measurements were obtained as at the baseline.

**Findings and Conclusions:** There were no statistically significant differences between the test and the control groups for any probing measure. For the clinical attachment level, all classes of recession gained attachment for both the CPF and the ADM groups. Mean marginal tissue thickness increased by  $1.15 \pm 0.28$  mm for ADM group, whereas the mean marginal thickness of CPF alone sites remained essentially unchanged 0.77 mm at the 6-month exam. The change was statistically significant only for the ADM group. The mean gingival thickness at the MGJ at the initial exam for the ADM group was 0.76mm, which increased to 1.08mm, for the CPF was 0.75mm, which increased to 0.85 mm at 6 month. The increase was significant for ADM group. There were no statistically significant differences gained due to creeping attachment either within or between groups for these 2- to 6-month changes. A CPF plus an ADM allograft produced significantly greater mean defect coverage 99% than a CPF alone 67%. The improved result may be attributed to an increase in mean marginal tissue thickness produced by the ADM graft.

*Trombelli L, Minenna L, Farina R, Scabbia A. Guided tissue regeneration in human gingival recessions: a 10-year follow-up study. J Clin Periodontol 2005; 32: 16–20.*

**Purpose:** To evaluate the changes of the mucogingival complex of treated gingival recession defects with guided tissue regeneration (GTR) through a 10-year follow-up.

**Materials and Methods:** 20 patients (11 males & 9 females) with a mean age of  $44.3 \pm 10.4$  years were included in the study. Each patient with one Miller's class I or II, deep ( $\geq 3$  mm), buccal gingival recession defects during the period 1991-1993 were treated with a polytetrafluoroethylene membrane. Recession defects were selected only when they had revealed RD reduction  $\geq 2$ mm and root coverage  $\geq 60\%$  at 6 months following GTR treatment. 9 patients were smokers at the time of surgery and at 8 of them continued for 10 years post-surgery. Recession depth (RD), probing depth (PD), clinical attachment level (CAL), and width of keratinized gingiva (KG) were assessed immediately before surgery, at 6 months, 4 years and 10 years post-surgery.

**Findings and Conclusions:** At 6 months RD was  $0.9 \pm 0.6$ mm (80%), and increased to  $1.0 \pm 1.3$ mm at 4 years and to  $1.3 \pm 1.6$ mm at 10 years. PD varied from  $1.0 \pm 0.5$ mm at 6 month evaluation to  $1.2 \pm 0.4$ mm at 4 years and  $1.4 \pm 0.5$ mm at 10 years. At 6 months CAL amounted to  $1.9 \pm 1.0$ mm and shifted to  $2.2 \pm 1.4$  at 4 years and  $2.6 \pm 1.6$ mm at 10 years. KG amounted to  $3.1 \pm 0.9$ mm following surgery and remained stable thereafter. At 10-year examination, no significant changes from 4-year evaluation were observed. No significant differences were found for the changes between 4 years and 10 years between smokers and non-smokers. Results of the present study failed to demonstrate changes over time in the clinical outcome achieved following GTR procedure in gingival recession defects over a period between 4 and 10 years post-surgery. Neither augmentation of apicocoronal dimension of the gingival nor apical shift of MGJ location to its original location has been observed at 10 year examination.

*Trabulsi Manal, Oh TJ, Eber R, et al. Effect of enamel matrix derivative on collagen guided tissue regeneration-based root coverage procedure. J Periodontol 2004;75:1446-57. (150 Refs)*

**Purpose:** To investigate the adjunctive effect of EMD on collagen membrane GTR-based root coverage.

**Materials and Methods:** 26 patients, 14 females and 12 males aged 20 to 65 with Miller Class I or II recession defects  $\geq 2.5$ mm were included in the study. Subjects were randomly assigned to receive either the EMD + collagen membrane+coronally advanced flap (CAF) (EMDC test group) or the collagen membrane+CAF (GTRC-control group). Clinical measurements were recorded for each study subject at baseline, 3 and 6 months: the probing depth (PD); the relative clinical attachment level (RCAL), recorded from a reference point on a reference stent to the apical end of the sulcus; the width of keratinized gingiva (KG); the recession depth (RD), measured from the CEJ to the free gingival margin at the deepest site along the tooth axis; the recession width (RW), determined by the horizontal dimension of the gingival defect at the level of the CEJ; and gingival tissue thickness (GTT); Plaque Index (PII) and Gingival Index (GI).

**Findings and Conclusions:** Baseline measurements for the test and control groups showed no statistical differences in any parameters evaluated. RD for the test group decreased from  $3.53 \pm 0.69$ mm to  $1.30 \pm 0.63$ mm, with a difference of  $2.23 \pm 0.63$ mm. For the control group, RD decreased from  $3.23 \pm 0.66$ mm to  $0.84 \pm 0.89$ mm, with a difference of  $2.38 \pm 0.86$ mm. At 6 months, root coverage percentage was  $63 \pm 16.5\%$  for the EMDC group, and  $75 \pm 25.6\%$  for the GTRC group. RW measurements showed a change of  $1.53 \pm 1.05$ mm in the EMDC group, compared to a change of  $2.30 \pm 1.47$ mm in the GTRC group. The mean RCAL in the test group changed from  $11.00 \pm 1.68$ mm to  $9.23 \pm 1.64$ mm, a difference of  $1.76 \pm 0.72$ mm, while the control group showed an RCAL change from  $10.96 \pm 1.39$ mm to  $9.57 \pm 1.28$ , a difference of  $1.38 \pm 1.26$ mm. A statistically significant difference was detected in RD, RW and RCAL for both groups between baseline and 6 months; however, no statistically significant difference was noted in reduction between groups. No other significant differences were noted in other clinical parameters (PD, GTT, KG, GI and PII). The results showed GTR-based root coverage utilizing collagen membrane, with or without EMD, can be successfully used in obtaining gingival recession coverage. The application of EMD during GTRC procedures did not add additional benefit to the final clinical outcome.

*Prato GPP, Rotundo R, Cortellini P, Tinti C, et al. Interdental papilla management: A review and classification of the therapeutic approaches. Int J of Periodontics and Restorative Dent 2004;24(3):246-55. (19 Refs)*

**Purpose:** To review and classify the therapeutic approaches in management of interdental papilla.

**Materials and Methods:** Literature review

**Findings and Conclusions:** When the vertical distance from the contact point to the crest of bone is 5 mm or less, the papilla is present almost 100% of the time. When the distance is 6 mm or more, the papilla is usually missing.

Nordland and Tarnow's classification of the loss of interdental papilla:

- Normal : interdental papilla fills the embrasure to the apical extent of the interdental contact point/area.
- Class I: the tip of the interdental papilla lies between the interdental contact point and the most coronal extent of the interproximal CEJ.
- Class II: the tip of the interdental papilla lies at or apical to the interproximal CEJ but coronal to the apical extent of the facial CEJ.
- Class III: the tip of the interdental papilla lies level with or apical the the facial CEJ.

Treatment: The non-surgical approaches modify the interproximal space, thereby inducing modifications to the soft tissues. The surgical techniques aim to recontour, preserve, or reconstruct the soft tissue between teeth and implants.

Non-surgical approaches:

1. Correction of traumatic oral hygiene procedures
2. Restorative/prosthetic restorations: Abnormal tooth shape may attribute to a "missing" papilla and an appropriate restorative technique is indicated to favor the creeping of the interdental tissues.
3. Orthodontic approach: In the presence of diastema, the contact point is lacking and therefore the classification criteria of Nordland and Tarnow cannot be applied. In situations of periodontal health, an orthodontic approach to reduce the diastema and create a contact point between the adjacent teeth, without periodontal attempts to build up the missing papilla is indicated. When a diastema is due to periodontal disease, the orthodontic closure of the diastema can be performed after the resolution of inflammation.
4. Repeated curettage of the papilla: Shapiro describes a non-surgical approach to recreate papillae destroyed by ANUG by repeated SRP every 15 days for 3 months to induce a proliferative hyperplastic inflammatory reaction of the papilla.

### Surgical approaches:

1. Papilla recontouring: In the presence of gingival enlargement, the excess tissue should be eliminated to remodel the soft tissue architecture.
2. Papilla preservation by Takei et al: Sulcular incision on buccal and palatal aspects of the tooth; palatally, a semi-lunar incision across each interdental papilla 5 mm from the gingival margin; interdental tissue elevated intact with the facial flap; after treatment, the buccal flap, including the palatal/lingual aspect of the papilla is repositioned, palatal/lingual papilla is sutured with the palatal/lingual flap.
3. Modified papilla preservation technique by Cortellini et al: Horizontal incision on the buccal papillary tissue at the base of the papilla; full-thickness palatal flap with the interdental papilla is elevated; buccal full-thickness flap is elevated with vertical releasing incisions; barrier membrane is positioned to cover the defect; interdental tissues are repositioned and sutured with horizontal internal crossed mattress suture to completely cover the membrane; a second vertical internal mattress suture is placed between the buccal aspect of the interproximal papilla and the most coronal portion of the buccal flap to ensure primary closure. This technique is applicable in wide interdental spaces (>2mm), especially in the anterior dentition.
4. Simplified papilla preservation flap (SPPF) by Cortellini et al: oblique incision across the defect associated papilla from the gingival margin at the buccal line angle of the involved tooth to the midinterproximal portion of the papilla under the contact point of the adjacent tooth; full thickness palatal flap, including the papilla and a split thickness buccal flap are elevated; barrier membrane positioned and sutured with horizontal internal mattress suture to allow coronal positioning of the buccal flap. The SPPF is applicable in narrow interdental spaces (<2mm).
5. Papilla reconstruction:
  - a) Pedicle flap with papilla preservation: a palatal split thickness flap is dissected and labially elevated. The flap is folded on itself and sutured to create the new papilla.
  - b) Han and Takei proposed an approach based on the use of a semilunar incision placed in the alveolar mucosa of the interdental area. Intrasulcular incisions connect with the semilunar incision to allow elevation of split-thickness flap and the coronal displacement of the gingivaopapillary unit. A subepithelial free gingival CT graft is placed beneath the coronally positioned interdental tissue.
  - c) Using a buccal and palatal split-thickness flap with a CT graft.
  - d) In case of root coverage in a class IV recession: A subepithelial CT graft and coronal repositioned flap to allow simultaneous treatment of the gingival recession and interproximal missing papilla.
  - e) To increase the volume of the interdental papilla, bone graft and a palatal free CT graft in an envelope flap.
6. Implant associated papillary defects: Buccal full-thickness from a site slightly more palatal with respect to the implant; coronally reposition and suture; after 4-5 weeks perform a vestibular scalloped gingivectomy to create positive architecture of the gingival margin.

*Harris RJ. Gingival augmentation with acellular dermal matrix: Human histologic evaluation of a case-placement of the graft on periosteum. Int J Periodontics Restorative Dent 2004; 24:378-85. (10 Refs)*

**Purpose:** To evaluate the clinical and histologic results when acellular dermal matrix (ADM) is utilized for gingival augmentation on a periosteum recipient bed.

**Materials and Methods:** A case report on a healthy 65 year-old male.

Tooth #20 presented with 2.0 mm probe depth, 0.5 mm keratinized gingival, 3 mm of recession and PFM bridge abutment with a Class V amalgam restoration which was placed 5+ years prior. The goal of the procedure was to augment the gingiva, not root coverage. Pre-operatively, photographs were taken and recession from the CEJ, probe depth and width of keratinized tissue were measured.

A partial thickness flap was reflected by sharp dissection to prepare the recipient site. The ADM was hydrated in 2 saline washes. The ADM was placed with the basement membrane side up and secured with 5-0 gut suture. Periodontal dressing was then placed. The patient was seen at 1 week, 3 weeks, 6 weeks, 15 months and 18 months post-surgery. At 18 months, recession from the CEJ, probe depth and width of keratinized tissue were recorded.

Because the amount of keratinized gingiva did not increase at 18 months, the patient underwent a free gingival graft procedure. At that time, a 2 mm punch biopsy was obtained distal to #20. The biopsy material was stained with hematoxylin-eosin stain and Verhoeff's stain.

**Findings and Conclusions:**

1. Clinically, no increase in keratinized tissue was observed at 18 months. A thickening of the tissue was noted and the alveolar mucosa was not as mobile.
2. The biopsy demonstrated mature, stratified epithelium, with parakeratinized superficial layer.
3. The connective tissue papillae, if present, were shallow, which is similar to alveolar mucosa.
4. Acellular dermal matrix contains a dense elastin network. This dense elastin network, as identified by Verhoeff's stain, was observed just below the epithelium within the connective tissue. Acellular dermal matrix graft placed on periosteum resulted in incorporation of the graft in the connective tissue and an overall thickening of tissue; however, an increase in keratinized tissue does not occur.

*Gurgan CA, Orec AM and Akkaya M. Alterations in location of the mucogingival junction 5 years after coronally repositioned flap surgery. J Periodontol 2004;75(6):893-901*

**Purpose:** to evaluate whether the mucogingival junction (MGJ) reverts back towards its original location following coronally repositioned flap (CRF) procedure in a 5-year follow-up period.

**Materials and Methods:** 24 systemically healthy patients (19 women and 5 men) aged between 17 to 52 were selected from the patient pool of periodontology clinic at Ankara University, Faculty of Dentistry. Patient selection criteria included: 1) Miller's Class I buccal gingival recession >1mm. 2) presence of keratinized gingiva >1mm apical to recession. 3) probing depth < 2mm. 4) radiographic evidence of sufficient bone loss. 5) no loss of soft tissue in interdental area; and 6) tooth vitality and absence of groves, irregularities, caries, or restoration in the area being treated. Each patient received initial and reinforced oral hygiene instruction. All clinical measurements were performed by one examiner. An individual reference acrylic stent was prepared for each recession site in order to standardize the placement of the probe. The following clinical parameters were measured at baseline and 1-, 6-, 12-, and 60- month post surgery: plaque index (PI), gingival index (GI), location of the gingival margin (LGM) from the cemento-enamel junction (CEJ), thickness of the gingival margin (GMT), transgingival probing from 1 mm apical to the GM, recession width (RW), the horizontal dimension of the GM at the level of the CEJ, probing depth (PD), clinical attachment level (CAL), width of keratinized gingival (WKG), location of the MGJ (LMGJ). All clinical measurements, except LMGJ and WKG were taken to the nearest 0.5mm by using a periodontal probe. The remaining two measurements were done by using a Boley Gauge (measured accurately 0.1mm). After that, coronally repositioned flap was performed by a single operator with more than 10 years of clinical experience. The study was originally planned for 12 month prospective evaluation of 24 patients with 48 recession defects following CRF surgery. Four years later, all the patients involved in the 12-month study were invited to return for a 60-month evaluation. Thirteen patients (10 women, 3 men) with 26 recession defects from the study group returned for examination.

**Findings and Conclusions:** the mean PI and GI were low throughout the 60-month period. There was no significant difference between the 12- and 60 month follow-up patients for any of the clinical measurements within the 12-month evaluation period. The mean percentage of the root coverage obtained at the end of 1 month was 68.26%± 30.37% and the end of the 6 months, this mean percentage was reduced to 55.76% ± 38.86%. The mean coronal displacement of LGM and LMGJ at 1 month postoperatively were 1.50±0.65 and 2.01±0.78 mm respectively. At the end of the 60 month follow-up period, the mean apical displacement of LGM was 0.67±0.72 mm, and the same mean apical displacement value for LMGJ was 0.98± 1.19mm. The amount of change from 1 to 60 months significantly differed between LGM and LMGJ. More than half of the sites showed no change or no decrease for each clinical measurement. However, for the alteration of LMGJ measurements, 20 of the 26 sites were found to be apically positioned compared to the results at 1 month. There was no significant relationship between the alteration of LGM and LMGJ from 1 to 60 months. The alteration of WKG from 1 to 60 months was significantly correlated with the alteration of LMGJ. This study indicates that the CRF procedure failed to

maintain the GM in coronal position and did not result in a permanent coronal shift of the MGJ. However, a remarkable tendency of the MGJ to regain its original position was observed and its tendency was partially dependent on the apical movement of the GM.

*Cuvea MA, Boltchi FE, Hallmon WW, et al. A comparative study of coronally advanced flaps with and without the addition of enamel matrix derivative in the treatment of marginal tissue recession. J Periodontol 2004;75(7):949-56. (42 Refs)*

**Purpose:** To evaluate whether the application of EMD in conjunction with the coronally advanced flap technique will enhance the clinical outcome and predictability of this procedure.

**Materials and Methods:** In this split mouth design, 29 sites and 29 control sites were evaluated in 11 females and six males, ages 23 to 55 years at intervals of 3 and 6 months. Inclusion criteria included buccal recession defects >2mm depth limited to incisors, canines and premolars and plaque index of <10%. All patients received SRP and oral hygiene instructions. The clinical parameters to be evaluated included vertical recession (VR); horizontal recession (HR) at CEJ; PD, CAL, Papillary height (PH), papillary width (PW), papillary surface area (PSA), keratinized tissue level (KTL), tissue thickness, Miller's classification of recession, flap tension and root prominence. A GEE regression was used to calculate mean percentage root coverage. Surgical procedures: A split thickness pedicle flap was dissected, the root surfaces at test and control sites were conditioned with a 24% EDTA gel for 2 minutes, rinsed, dried and EMD was applied to denuded test sites starting at the base of the recession. The flap was displaced coronally without tension to CEJ level, fully covering the recession and sutured. Test sites received a second application of EMD directly over the incisions. The surgical procedures for the control sites were identical with the exception of EMD application.

**Findings and Conclusions:**

1. Baseline clinical parameters showed significant difference between treatment groups only for distal periodontal attachment.
2. A significant reduction in horizontal recession, root surface area exposed over time at 3 and 6 months was found in both test and control sites.
3. The vertical recession in test sites was reduced from an adjusted mean of 2.79 mm pre-operatively to 0.33 mm at 3 months and 0.19 mm at 6 months. In contrast, significantly less reduction in vertical recession was obtained in control sites.
4. At both 3 and 6 months, test sites demonstrated significantly greater root coverage compared to control sites.
5. Test sites had significantly more keratinized tissue after 6 months compared to control sites. There was a mean increase in KTL of 0.6 mm for test sites and a mean decrease of 0.05 mm for control sites.

**Burkhardt R, Lang NP. Coverage of localized gingival recessions: comparison of micro- and macrosurgical techniques. *J Clin Periodontol* 2005;32:287–293.**

**Purpose:** To study the wound healing following mucogingival surgical interventions, microsurgically modified, in a randomized controlled clinical trial

**Materials and Methods:** A total of 10 patients underwent periodontal surgery to correct bilateral class I or II gingival defects on maxillary canines. A microsurgical approach was used for one site (test), while the other defect was treated with a conventional macrosurgical technique (control). Both defects were managed with a connective tissue graft covered by a double-pedicle papilla flap and treated on the same day. The control site was treated without the use of any optical magnification aids. The test site was performed under a surgical microscope at 15x magnification with the use of a microsurgical needle holder, microsurgical anatomical forceps and microsurgical scissors. The graft and flap were secured to the tooth with a vertical modified sling mattress suture with a 7-0 polyamid thread, while the closure of the papilla flap was performed with a 9-0 polypropylene thread. Consecutive postsurgical angiograms were recorded with sodium fluorescein to determine the amount of vascularization to the area, immediately after surgery and after 3 and 7 days post-operatively. Clinical measurements were recorded pre-operatively and then 1, 3, 6, and 12 months post-operatively.

**Findings and Conclusions:** Two patients were lost to follow-up and were not included in the final results. There was a highly significant difference in the operation time for each procedure with the macrosurgical approach averaging 51 mins and the microsurgical technique requiring an average of 72 mins. The mean vascularization of each surgical site immediately after surgery was  $8.9 \pm 1.9\%$  for the test site and  $8.0\% \pm 1.8\%$  for the control site. The difference of .9% was statistically significant. With 3 days of healing, a highly significant difference in vascularization was observed between the microsurgical sites ( $53.5 \pm 10.5\%$ ) vs. the macrosurgical sites ( $44.5 \pm 5.7\%$ ). Microsurgical sites demonstrated a higher degree of vascularization ( $84.8 \pm 13.5\%$ ) after 1 week than compared to the macrosurgical sites ( $63.9\% \pm 12.3\%$ ). Clinical measurements taken after 1 month indicated a statistically significant difference in root coverage with an average coverage of 99.4% for the microsurgical sites and 90.8% for the macrosurgical sites. After 3 months post-operatively, the % root coverage for microsurgical was 98.0% and macrosurgical was 89.7%. This difference was statistically significant. Only 2 sites achieved 100% coverage with the macrosurgical approach, while 5 sites in the microsurgical technique attained 100% coverage. This study demonstrates a high % of root coverage for a CT/double papilla flap with either a macrosurgical or microsurgical approach. The microsurgical technique produced superior results, but additional time and cost must be considered in the overall treatment outcome.