Treatment of Miller Class I, and II gingival recessions

Long-term evaluation (20 years) of the outcomes of subepithelial connective tissue graft plus coronally advanced flap in the treatment of maxillary single recession-type defects.

Prato GPP¹, Franceschi D², Cortellini PP¹,³, Chambrone L⁴.


Abstract

BACKGROUND: Subepithelial connective tissue graft with coronally advanced flap (SCTG + CAF) has been considered the best and most predictable root coverage procedure. Thus, the aims of this study are twofold: 1) to evaluate the long-term outcomes following SCTG + CAF in the treatment of gingival recessions (GR) and 2) to explore the influence of several tooth/patient related factors on the stability of gingival margin at 1 year and 5,10,15,20 years after surgery.

METHODS: 45 patients with 45 maxillary GR (Miller’s Class I or III) were treated with SCTG + CAF in a private practice between 1990 and 1997. Recession depth (RD), probing depth (PD), keratinized tissue (KT) width and patient/tooth-associated variables were recorded for each GR at baseline, 1 year, 5, 10, 15, 20 years after surgery. Parametric, non-parametric, and logistic regression statistics were used throughout the study RESULTS: A total of 21 Class I (44.67%) and 24 Class III (53.33%) GR were treated. Considering all the 45 GR, statistically significant improvements were found for RD in all evaluations (P < 0.05) compared to baseline data. Over the course of the study, mean root coverage (MRC) decreased from 74.23% (one year) to 67.69% (20 years). Within maxillary Class I defects, CRC at 1-year follow-up was 57.14% (n = 12) and 47.62% (n = 10) at the end of study period, whereas MRC decreased from 82.37% to 77.62%, respectively. Within maxillary Class III recessions, CRC of 20.83% (n = 5) was found at both the 1-year and the 20-year follow-ups. On the other hand, MRC decreased from 66.55% to 58.18%, respectively. The results of logistic regression analysis showed that the achievement of CRC was associated with sites not presenting interdental tissue loss (i.e., Class I, OR: 5.031, p = 0.024), whereas GR recurrence appeared associated to with sites with attached KT < 2 mm (i.e., 5-, 10-, 15- and 20-year follow-ups), to teeth presenting root steps (i.e., 10- and 20-year follow-ups), and smoking (i.e., 15-year follow-up).
CONCLUSIONS: Positive RD reduction and KT improvements achieved by SCTG + CAF at short-term may be preserved long-term with the majority of the treated sites not displaying relapse of the gingival margin. Teeth lacking a minimal 2 mm width of attached KT and presenting non-carious cervical lesions were more prone to develop an apical shift of the gingival margin during a 20-year follow-up period. This article is protected by copyright. All rights reserved
Xenogenic collagen matrix or autologous connective tissue graft as adjunct to coronally advanced flaps for coverage of multiple adjacent gingival recession: Randomized trial assessing non-inferiority in root coverage and superiority in oral health-related quality of life.

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Abstract

AIM:

To evaluate the non-inferiority of the adjunct of a xenogeneic collagen matrix (CMX) or connective tissue graft (CTG) to coronally advanced flaps (CAF) for coverage of multiple adjacent recessions and compare superiority in patient-reported outcomes (PROM).

MATERIAL AND METHODS:

One hundred and eighty-seven subjects (92 CMX) with 485 recessions in 14 centres were randomized and followed up for 6 months. Patients filled daily diaries for 15 days to monitor patient-reported experience. The primary outcome was changed in position of the gingival margin. Multilevel analysis used centre, subject and tooth as levels and baseline parameters as covariates.

RESULTS:

Average baseline recession was $2.5 \pm 1.0$ mm. The surgery was 15.7 min shorter (95\%CI from 11.9 to 19.6, $p < .0001$) and perceived lighter (11.9 VAS units, 95\%CI from 4.6 to 19.1, $p = .0014$) in CMX subjects. Time to recovery was 1.8 days shorter in CMX. Six-month root coverage was $1.7 \pm 1.1$ mm for CMX and $2.1 \pm 1.0$ mm for CTG (difference of 0.44 mm, 95\%CI from 0.25 to 0.63 mm). The upper limit of the confidence interval was over the non-inferiority margin of 0.25 mm. Odds of complete root coverage were significantly higher for CTG (OR = 4.0, 95\% CI 1.8-8.8).

CONCLUSION: Replacing CTG with CMX shortens time to recovery and decreases morbidity, but the tested generation of devices is probably inferior to autologous CTG in terms of root coverage. Significant variability in PROMs was observed among centre
Treatment of multiple maxillary adjacent class I and II gingival recessions with modified coronally advanced tunnel and a new xenogeneic acellular dermal matrix.

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Abstract

OBJECTIVE: To evaluate the treatment of maxillary Miller Class I and II multiple adjacent gingival recessions using the modified coronally advanced tunnel technique (MCAT) combined with a new porcine acellular dermal matrix (PADM).

MATERIALS AND METHODS: Twelve patients exhibiting at least six adjacent maxillary Miller Class I and II gingival recessions were consecutively treated by means of MCAT and a PADM. Recession depth (RD), recession width (RW), probing pocket depth (PD), keratinized tissue height (KT), clinical attachment level (CAL), mean root coverage (RC), and complete root coverage (CRC) were recorded.

RESULTS: At 12 months, CRC was obtained in 43% of the 100 gingival recessions, while the mean RC measured 84.35%. Mean RD reduction was $3.16 \pm 0.75 \text{ mm (P < 0.001)}$, mean RW reduction was $1.73 \pm 0.65 \text{ mm (P < 0.001)}$, while the gain of CAL was $3.26 \pm 1.33 \text{ mm (P < 0.001)}$. All patients were satisfied with the esthetic appearance and would undergo the same surgery again.

CONCLUSION: Within their limits, the present results indicate that treatment of Miller Class I and II multiple gingival recessions using PADM in conjunction with the MCAT could be successfully used as an alternative to connective tissue grafts, with the advantage of avoiding the discomfort and morbidity of connective tissue harvesting.

CLINICAL SIGNIFICANCE: The modified coronally advanced tunnel technique using the new porcine acellular dermal matrix represents a clinically and esthetically satisfactory treatment of multiple Miller Class 1 and 2 recession defects.
Treatment of multiple adjacent maxillary Miller Class I, II, and III gingival recessions with the modified coronally advanced tunnel, enamel matrix derivative, and subepithelial connective tissue graft: A report of 12 cases.

Sculean A, Cosgarea R, Stähli A, Katsaros C, Arweiler NB, Miron RJ, Deppe H.


Abstract

OBJECTIVE: To clinically evaluate the healing of multiple adjacent maxillary Miller Class I, II, and III gingival recessions (MAGR) treated with the modified coronally advanced tunnel (MCAT) in conjunction with an enamel matrix derivative (EMD) and subepithelial connective tissue graft (SCTG).

METHOD AND MATERIALS: Twelve systemically healthy patients (6 females) with a total of 54 adjacent maxillary Miller Class I, II, or III MAGR were consecutively treated with MCAT in conjunction with EMD and SCTG. Out of the 54 recessions, 44 were classified as Miller Class I, five as Miller Class II, and five as Miller Class III. Patients were included in the study if they presented at least two adjacent recessions with a depth of ≥ 3 mm. Measurements were made at baseline (immediately before reconstructive surgery) and at 12 months postoperatively. The primary outcome variable was complete root coverage (CRC) (ie, 100% root coverage).

RESULTS: Healing was uneventful in all cases without any complications such as postoperative bleeding, allergic reactions, abscesses, or loss of SCTG. At 12 months, statistically highly significant (P < .0001) root coverage was obtained in all patients and recessions. CRC was obtained in 37 Miller Class I, three Miller Class II, and one Miller Class III recessions, respectively. Mean root coverage was 96%. Mean keratinized tissue width increased statistically highly significantly (P < .004) from 2.04 ± 0.95 mm at baseline to 2.37 ± 0.89 mm at 12 months.

CONCLUSION: The present findings indicate that the proposed treatment concept results in predictable coverage of multiple adjacent maxillary Miller Class I, II, and III MAGR.
Moraschini V, Barboza Edos S.

Abstract

BACKGROUND: The aim of this systematic review is to evaluate the effects of platelet-rich fibrin (PRF) membranes on the outcomes of clinical treatments in patients with gingival recession.

METHODS: Articles that were published before June 2015 were searched electronically in four databases without any date or language restrictions and searched manually in regular journals and unpublished studies. The eligibility criteria comprised randomized controlled trials (RCTs) and prospective controlled trials with follow-up periods of ≥ 6 months that compared the performance of PRF to other biomaterials in the treatment of Miller Class I or II gingival recessions. For the meta-analysis, the inverse variance method was used in fixed- or random-effect models, which were chosen according to heterogeneity. The estimates of the intervention effects were expressed as the mean differences in percentages or millimeters.

RESULTS: Six RCTs and one prospective clinical trial are included in this review. Root coverage (RC) and clinical attachment level (CAL) did not differ significantly between the analyzed subgroups (P = 0.57 and P = 0.50, respectively). The keratinized mucosa width (KMW) gain was significantly greater (P = 0.04) in the subgroup that was treated with connective tissue grafts.

CONCLUSION: The results of the meta-analysis suggest that the use of PRF membranes did not improve the RC, KMW, or CAL of Miller Class I and II gingival recessions compared with the other treatment modalities.

Chaparro A, De la Fuente M, Albers D, Hernandez D, Villalobos AM, Gaedechens D, De la Fuente M, De la Fuente M.


Abstract

The objective of the present report was to study the influence of the location (maxilla versus mandible) and class (Miller classification) of gingival recessions on the total root coverage achievement using the tunnel procedure with acellular dermal matrix in adjacent single-root teeth. Twenty-four patients with 93 recessions were treated and evaluated 1 year postsurgery. Results showed 100% of root covered in 67.9% of the maxillary recessions and 52.5% in the mandible (P = .676). In cases of partial root coverage, the initial recession diminished from 4.41 mm (SD: 1.12) to 0.82 mm (SD: 0.24) in the maxilla and from 3.78 mm (SD: 1.08) to 0.78 mm (SD: 0.30) in the mandible. Root coverage of 100% was observed in 74.07% of Miller Class I recessions in comparison with 43.59% of Class II recessions (P = .003).
Treatment of multiple adjacent Miller class I and II gingival recessions with a Modified Coronally Advanced Tunnel (MCAT) technique and a collagen matrix or palatal connective tissue graft: a randomized, controlled clinical trial.

Aroca S1, Molnár B, Windisch P, Gera I, Salvi GE, Nikolidakis D, Sculean A.


Abstract

BACKGROUND: A newly developed collagen matrix (CM) of porcine origin has been shown to represent a potential alternative to palatal connective tissue grafts (CTG) for the treatment of single Miller Class I and II gingival recessions when used in conjunction with a coronally advanced flap (CAF). However, at present it remains unknown to what extent CM may represent a valuable alternative to CTG in the treatment of Miller Class I and II multiple adjacent gingival recessions (MAGR). The aim of this study was to compare the clinical outcomes following treatment of Miller Class I and II MAGR using the modified coronally advanced tunnel technique (MCAT) in conjunction with either CM or CTG.

METHODS: Twenty-two patients with a total of 156 Miller Class I and II gingival recessions were included in this study. Recessions were randomly treated according to a split-mouth design by means of MCAT + CM (test) or MCAT + CTG (control). The following measurements were recorded at baseline (i.e. prior to surgery) and at 12 months: Gingival Recession Depth (GRD), Probing Pocket Depth (PD), Clinical Attachment Level (CAL), Keratinized Tissue Width (KTW), Gingival Recession Width (GRW) and Gingival Thickness (GT). GT was measured 3-mm apical to the gingival margin. Patient acceptance was recorded using a Visual Analogue Scale (VAS). The primary outcome variable was Complete Root Coverage (CRC), secondary outcomes were Mean Root Coverage (MRC), change in KTW, GT, patient acceptance and duration of surgery.

RESULTS: Healing was uneventful in both groups. No adverse reactions at any of the sites were observed. At 12 months, both treatments resulted in statistically significant improvements of CRC, MRC, KTW and GT compared with baseline (p < 0.05). CRC was found at 42% of test sites and at 85% of control sites respectively (p < 0.05). MRC measured 71 ± 21% mm at test sites versus 90 ± 18% mm at control sites (p < 0.05). Mean KTW measured 2.4 ± 0.7 mm at test sites versus 2.7 ± 0.8 mm at control sites (p > 0.05). At test sites, GT values changed from 0.8 ± 0.2 to 1.0 ± 0.3 mm, and at control sites from 0.8 ± 0.3 to 1.3 ± 0.4 mm (p < 0.05). Duration of surgery and patient morbidity was statistically significantly lower in the test compared with the control group respectively (p < 0.05).

CONCLUSIONS: The present findings indicate that the use of CM may represent an alternative to CTG by reducing surgical time and patient morbidity, but yielded lower CRC than CTG in the treatment of Miller Class I and II MAGR when used in conjunction with MCAT.
Predictability of surgical techniques used for coverage of multiple adjacent gingival recessions--A systematic review.


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Abstract

OBJECTIVE: Predictable coverage of multiple adjacent gingival recessions (MAGR) is a major challenge for clinicians. Although several surgical techniques have been proposed to treat MAGR, it is still unclear as to what extent the proposed approaches may lead to predictable root coverage. The aim of this article is to identify the predictability of the available surgical techniques used to achieve complete root coverage (CRC) of Miller Class I, II, and III MAGRs.

METHOD AND MATERIALS: A search of the PubMed database was performed. Additional hand searching and a search for gray literature were also conducted. Due to the heterogeneity of the data, no meta-analysis could be performed.

RESULTS: The search resulted in the selection of 16 publications analyzed in this review. In Miller Class I and II MAGRs, the coronally advanced flap (CAF) and the modified coronally advanced flap (MCAF) yielded a CRC ranging from 74.6% to 89.3% and a mean root coverage (MRC) ranging from 91.5% to 97.27% at 6 to 12 months following surgery. In Miller Class I and II recessions, the results obtained with MCAF were maintained for up to 5 years (CRC ranging from 35% to 85.1%), as indicated by two studies. One study has indicated that MCAF + connective tissue grafting (CTG) may improve the long-term stability of CRC compared with MCAF (35% CRC without CTG vs 52% CRC with CTG). In Miller Class I and II MAGRs, the use of CTG in conjunction with CAF, MCAF, coronally positioned pedicle (CPP), double pedicle graft (DPG), or the supraperiosteal tunnel technique yielded higher CRC or MRC than with bioabsorbable membranes, acellular dermal matrix (ADM), or platelet-rich fibrin (PRF). In Miller Class III MAGRs, the modified coronally advanced tunnel (MCAT) and CTG with and without an enamel matrix derivative resulted in 38% CRC and in 82% to 83% MRC, respectively.

CONCLUSION: The present findings indicate that in Miller Class I and II MAGRs, CAF or MCAF with or without CTG may lead to predictable CRC; the CRC obtained with MCAF were maintained over a period of 5 years; the use of CTG appears to improve the long-term stability of the MCAF; and the use of CTG in conjunction with CAF, MCAF, CPP, DPG, or the supraperiosteal tunnel technique appear to yield higher CRC or MRC than the use of bioabsorbable membranes, ADM, or PRF. Also, MCAT plus CTG appears to represent a valuable technique for the treatment of Miller Class III MAGRs.
Root-coverage procedures for the treatment of localized recession-type defects: a Cochrane systematic review.

Chambrone L¹, Sukekava F, Araújo MG, Pustiglioni FE, Chambrone LA, Lima LA.


Abstract

BACKGROUND: The purpose of this review is to evaluate the effectiveness of different root-coverage procedures in the treatment of recession-type defects.

METHODS: The Cochrane Oral Health Group Trials Register, Cochrane Central Register of Controlled Trials, MEDLINE, and EMBASE were searched for entries up to October 2008. There were no restrictions regarding publication status or the language of publication. Only clinical randomized controlled trials (RCTs) with a duration > or = 6 months that evaluated recession areas (Miller Class I or II > or = 3 mm) that were treated by means of periodontal plastic surgery procedures were included.

RESULTS: Twenty-four RCTs provided data. Only one trial was considered to be at low risk of bias. The remaining trials were considered to be at high risk of bias. The results indicated a significantly greater reduction in gingival recession and gain in keratinized tissue for subepithelial connective tissue grafts (SCTGs) compared to guided tissue regeneration (GTR) with bioabsorbable membranes (GTR bms). A significantly greater gain in keratinized tissue was found for enamel matrix protein compared to a coronally advanced flap (0.40 mm) and for SCTGs compared to GTR bms plus bone substitutes. Limited data exist on the changes of esthetic conditions as related to the opinions and preferences of patients for specific procedures.

CONCLUSIONS: SCTGs, coronally advanced flaps alone or associated with other biomaterial, and GTR may be used as root-coverage procedures for the treatment of localized recession-type defects. In cases where root coverage and gain in keratinized tissue are expected, the use of SCTGs seems to be more adequate.
Can subepithelial connective tissue grafts be considered the gold standard procedure in the treatment of Miller Class I and II recession-type defects?

Chambrone L\textsuperscript{1}, Chambrone D, Pustiglioni FE, Chambrone LA, Lima LA.


Abstract

OBJECTIVES: The objective of this systematic review was to answer the following question: 'Can subepithelial connective tissue grafts (SCTG) be considered the gold standard procedure in the treatment of recession-type defects?' DATA AND SOURCE: An electronic search (MEDLINE, EMBASE and CENTRAL) for randomized controlled clinical trials with at least 6 months' follow-up comparing SCTG with other procedures for the treatment of gingival recession was performed up to December 2007.

STUDY SELECTION: To be eligible to this review patients had to present a diagnosis of gingival recession with the following characteristics: (a) recession areas selected for treatment classified as Miller [Miller Jr PD. A classification of marginal tissue recession. International Journal of Periodontics & Restorative Dentistry 1985;5:8-13.] Class I or Class II of at least 2mm; (b) recession areas containing teeth with no caries or restorations; and (c) at least 10 participants per group at final examination. From a total of 568 references, 23 studies were considered relevant. The results indicated a statistically significant greater reduction in gingival recession for SCTG, when compared to acellular dermal matrix grafts and guided tissue regeneration with resorbable membranes (GTR rm). For clinical attachment level changes, differences between all groups were not significant. For changes in the keratinized tissue (KT), the results showed a statistically significant gain in the width of KT for SCTG when compared to GTR rm.

CONCLUSION: The results of this review show that subepithelial connective tissue grafts provided significant root coverage, clinical attachment and keratinized tissue gain. Overall comparisons allow us to consider it as the 'gold standard' procedure in the treatment of recession-type defects.