Periodontal plastic surgery procedures reduce localized gingival recession defects


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**Systematic review conclusion.** Periodontal plastic surgery (PPS) procedures can be used to treat localized recession-type defects effectively.

**Critical summary assessment.** Evidence from 24 randomized controlled trials (RCTs) suggests that PPS procedures improve clinical parameters such as root coverage and gain in clinical attachment level and keratinized tissue width, but how patients perceive the effect of the treatment is not clear.

**Evidence quality rating.** Limited.

**Clinical question.** Among patients with localized gingival recession (GR) defects, is one PPS procedure more effective than the others at improving patients’ perceptions of esthetics and reducing GR?

**Review methods.** Two reviewers independently searched published material in four databases (The Cochrane Oral Health Group Trials Register, Cochrane Central Register of Controlled Trials, MEDLINE and Embase) and unpublished data up to October 2008. They limited the studies they included to RCTs involving treatment of Miller Class I or II recession defects (≥ 3 millimeters) and a follow-up period of six months or more. The primary outcome measures they used were the perception of esthetic change condition (satisfactory, nonsatisfactory or not reported) by patients and actual GR change. The secondary outcome measures they used were change in clinical attachment level, change in keratinized tissue width, percentage of sites with complete root coverage, mean root coverage, a patient’s preference for a specific PPS procedure, and occurrence of adverse effects, postoperative complications or both. The reviewers conducted validity assessments for the studies that met the inclusion criteria. They also extracted data from these studies.

**Main results.** The search yielded 24 RCTs (14 split-mouth and 10 parallel designs) involving 599 patients. The reviewers found evidence regarding patient-reported outcomes in only three of the trials, but the studies’ authors provided insufficient data as to how these outcomes were measured, so the reviewers could not compare these studies. The results of a meta-analysis of 12 selected RCTs showed a statistically significant reduction in GR for subepithelial connective-tissue grafts (SCTGs) compared with guided tissue regeneration (GTR) bioabsorbable membrane sites (bms) (GTR bms, \( P = .0041 \)). The use of most of the PPS procedures resulted in a significant gain in clinical attachment levels and keratinized tissue width. Even though the reviewers noted no significant differences for clinical attachment levels among different procedures, they did note a significantly greater gain in keratinized tissue width for SCTGs versus GTR bms (with or without bone substitutes) and for enamel matrix protein plus coronally advanced flap versus coronally advanced flap alone. There was a marked variation in the amount of root coverage achieved, with mean root coverage of 80.9 percent (range, 50.0 to 97.3 percent) and complete root coverage of 46.6 percent (range, 7.7 to 91.6 percent). The results of two long-term trials showed that mean root coverage and complete root coverage decreased over time. The occurrence of early discomfort was related to donor sites of SCTGs, and the membrane exposure during healing was associated with primary postoperative complications for the GTR group.

**Conclusions.** Among patients with localized GR defects, the use of PPS procedures resulted in a decrease of GR of 80.9 percent (95 percent confidence interval, 50.0-97.3). How patients perceived these treatments was not clear.

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Importance and context. GR is a common problem among adults, and a number of surgical procedures are available to treat it. These procedures may improve esthetic conditions and other clinical outcomes such as recession depth, clinical attachment level and keratinized tissue width. The authors of previous systematic reviews regarding localized root-coverage procedures encountered potential trial bias and did not properly address other pertinent clinical questions regarding precise and objective esthetic evaluations.

Strengths and weaknesses of the systematic review. The reviewers were able to conduct a good-quality systematic review, which included a comprehensive and detailed search strategy, well-defined exclusion and inclusion criteria, and standard data extraction methods and validity assessment. In addition, they were able to independently review all trials that were published in all languages and performed a meta-analysis of 12 RCTs. They gave detailed study results for the remaining 12 RCTs.

Strengths and weaknesses of the evidence. The strengths of the review were undermined by the reviewers’ difficulty in combining data from different trials, owing to variability of comparisons between the PPS procedures used and to the lack of a gold standard control group. The lack of similar inclusion criteria between trials and allocation concealment, masking or both, as well as the use of inadequate randomization methods, resulted in the reviewers’ determining that only one RCT had a low risk of bias, whereas they determined that the remaining studies had a high risk of bias. A predictable amount of root coverage is expected after patients undergo PPS procedures, but the differences between the results from the use of various procedures in terms of patient-reported outcomes remain unknown.

Implications for dental practice. PPS procedures have a high degree of predictability in achieving root coverage in terms of reduction in the extent of GR and a concomitant gain in the clinical attachment level with or without an increase in keratinized tissue width. However, dentists should assess both the etiology and extent of GR before treating patients, as the results of studies have shown that that optimal root coverage can be achieved when baseline recession defects are less than 4 mm and the flap thickness is more than 1 mm. Dentists also should discuss the advantages and disadvantages of each PPS procedure with patients before they undergo treatment.

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