



CODEN [USA]: IAJ PBB

ISSN : 2349-7750

INDO AMERICAN JOURNAL OF
PHARMACEUTICAL SCIENCES

SJIF Impact Factor: 7.187

<https://doi.org/10.5281/zenodo.7508921>

Available online at: <http://www.iajps.com>

Review Article

**REVIEW-STRATEGIES INDICATORS OF TREATMENT OF
GINGIVAL RECESSION**

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Article Received: October 2022 Accepted: November 2022 Published: December 2022

Abstract:

Globally, gingival recession is extremely widespread. It raises the risk for root caries and can impair patient comfort, function, and appearance. We searched electronic databases for all pertinent research published up until the middle of 2022. Additionally, progressive gingival recession raises the likelihood of tooth loss due to clinical attachment loss. Although reducing the causes of gingival recession reduces its incidence and severity, it can be difficult to implement realistic management and preventative techniques in a clinical context. Developing action plans for relevant therapies begins with identifying susceptible patients and evaluating them for the presence of modifiable risk exposures.

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Please cite this article in press Abdulrahman Abdulghani Sarhan et al, *Review- Strategies Indicators Of Treatment Of Gingival Recession., Indo Am. J. P. Sci, 2022; 09(12).*

INTRODUCTION:

The shift of the soft tissue edge apical to the cemento-enamel junction characterizes gingival recession (CEJ). The chief causes of gingival recession are poor toothbrushing, aberrant frenum attachment, improper restorations, malpositioning of teeth, and age. Gingival recessions can lead to hypersensitivity, aesthetic impairment, and root cavities [1,2]. The growing interest in esthetics and the accompanying necessity to address related issues, such as hypersensitivity and root caries, have encouraged the development of numerous surgical treatments that provide the concealment of exposed roots. Root coverage (RC) has been achieved with free gingival grafts, laterally or coronally positioned flaps, semilunar flap, guided tissue regeneration (GTR), and subepithelial connective tissue grafts (SCTG) [3]. The percentage of afflicted individuals ranges from 30% to 100% [4,5]. Age increases the prevalence and severity of the disease [4]. It has been observed that the prevalence of recession of 1 mm in individuals 30 years old in the United States is 58%, with an average of 22.3% teeth per individual. In both clinical practice and continuing education, dentists devote considerable time and energy to the treatment of the esthetic zone [6].

Clinicians are particularly dissatisfied when gingival recession develops, for instance, after orthodontic tooth movement (**Fig. 1A**) and/or after dental restoration margins are properly positioned in close proximity to gingival tissue [7].

The gingival recessions were typically covered with free gingival grafts. However, it has been shown that recessions treated with free gingival grafts result in less root coverage than those treated with coronally positioned flaps, GTR, or SCTG [8]. Positioned flaps have variable success in root coverage, but according to certain research, healing is facilitated by a lengthy junctional epithelium. Recent studies have reported the development of new bone, new cementum, and new periodontal ligament [9] following the effective application of guided tissue regeneration to the treatment of gingival recession. The downsides of GTR include infection risk, foreign body reaction, membrane exposure, technical sensitivity, and cost. Additionally, a second surgical treatment is required to remove the non-resorbable membrane, which may compromise the healing process [10,11].

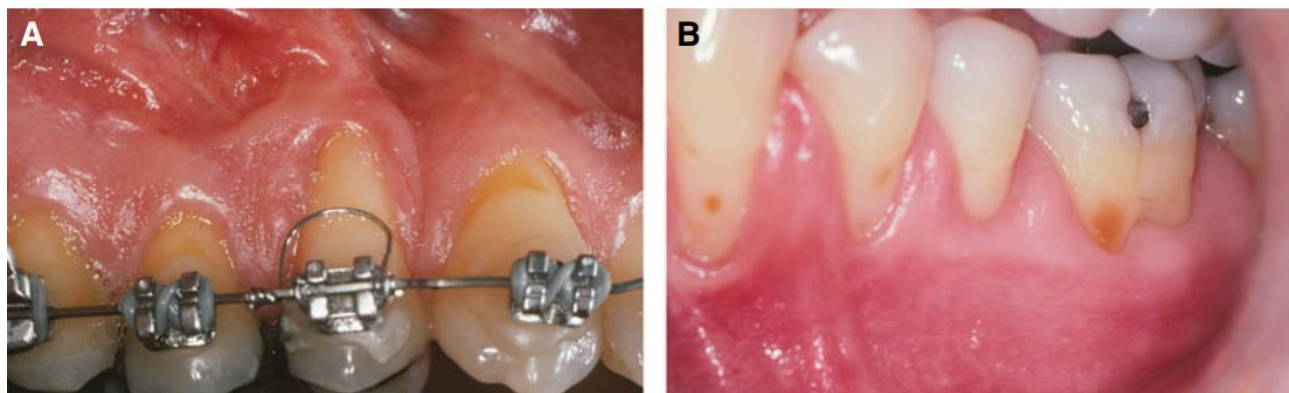


Fig 1: (A) Root exposure and root caries. (B) progressive gingival recession and clinically detectable root caries.

DISCUSSION:

Recession is the displacement of the gingival border apically from the cemento-enamel junction (CEJ) or from the prior site of the CEJ when restorations have altered the CEJ's location or appearance. Localized or widespread gingival recession can be related with one or more surfaces [12]. Numerous individuals display global gingival recession without being aware of the problem or experiencing any symptoms. However, patients are frequently concerned about gingival recession for one or more of the following reasons: fear of tooth loss, dentinal hypersensitivity, and poor esthetics. Because numerous possible contributing

elements interact to generate gingival recession, it is difficult to anticipate whether future gingival recession changes will occur at a given site [13].

Plaque-induced inflammation and mechanical abrasion/removal are the primary causes of gingival recession. Occasionally, thermal and chemical damage might cause recession [14,15]. In susceptible patients, mitigating these reasons will reduce the incidence and severity of gingival recession. Significant risk factors for gingival recession include (i) thin gingival tissue; (ii) mucogingival conditions; and/or (iii) a history of progressive gingival recession and/or inflammatory

periodontal disease(s) in teeth exhibiting any or both of the preceding two risk factors. Gingival tissue can be generically classified as either thick, average, or thin, based on its clinical appearance. Thicker gingival tissue seems densely fibrous and conspicuously keratinized, whereas thinner gingival tissue appears more transparent and keratinized less conspicuously. When discussing gingival tissues to patients, it is important to refer to thick tissue as protective and resilient and thin tissue as sensitive and fragile. Not all teeth will definitely experience gingival recession due to weak gingival tissue alone [16,17]. Mucogingival problems are abnormalities in the anatomical relationship between the gingival margin and the mucogingival junction. The most prevalent mucogingival disorders include gingival/soft-tissue recession, the absence or reduction of keratinized tissue, and/or probing depths that extend beyond the mucogingival junction [18]. The American Academy of Periodontology lists reduced keratinized tissue as a mucogingival condition in the section, Parameter on Mucogingival Conditions, of the Parameters of Care, but does not establish numerical criteria for what constitutes a clinically significant reduction [19].

Connective Tissue Autogenous Grafts:

Langer and Langer described the use of connective tissue grafts for root covering for the first time. On the recipient site, a partial-thickness flap with two vertical incisions was erected prior to the implantation of the transplant (which is collected from the palate by a double parallel incision technique). The flap is positioned coronally in an effort to cover the graft and take advantage of a twofold blood supply. They reported a 2 to 6 mm increase in root coverage in 56 instances over four years [20].

Raetzke [21] described a strategy for attaining root coverage using connective tissue grafts utilizing an envelope. In this procedure, the collar of marginal tissue surrounding a localized area of recession is removed, the root is debrided and planed, and a split-thickness envelope is constructed over the root's denuded surface. The palate was used to harvest the transplant using the double parallel incision approach. The connective tissue graft is inserted in the envelope covering the exposed root surface that was previously formed. Overall, eighty percent of the root surfaces were covered. Similarly, Allen [22] reported a success percentage of 84% for root coverage employing the same method. In nine patients, Jahnke and colleagues [23] examined the outcomes of free gingival and connective tissue grafts for root coverage. Selected paired defects were evaluated preoperatively and 3 and 6 months postoperatively. The average root coverage

for the free gingival graft group was 43%, while it was 80% for the connective tissue graft group. In their split-mouth controlled clinical research, Borghetti and Louise [24] found a 70% success rate for root covering one year after surgery.

Combination of one or more techniques:

In an effort to improve the success rate of root covering, some physicians have attempted to combine various treatments. Nelson [25] utilized a double pedicle transplant with connective tissue grafting. A free connective tissue graft was placed over the exposed root surface, followed by a double pedicle graft to partially cover it. Using this method, 29 problems were repaired and tracked for four years. The average root coverage was 88% (with 7–10 mm of recession), 92% (with 4–6 mm of recession), and 100% (with 3% of recession). Harris [26] modified Nelson's approach by covering the connective tissue transplant with a split-thickness pedicle graft. Thirty Miller class I and II faults with an average root coverage of 97% were selected. Wennstrom and Zucchelli [27] compared a coronally positioned flap to a technique involving a coronally positioned flap and connective tissue graft. It was possible to treat 103 (Miller class I and II) faults. Two years following surgery, the success rate for the combination group was 98.9%, whereas the success rate for the control group was 97%. The researchers found that the combination of a coronally positioned flap and connective tissue graft was the optimal treatment for root coverage [27].

Pedicle grafts:

Pedicle grafts are distinct from free autogenous soft tissue grafts in that the pedicle flap base contains its own blood supply, which nourishes the graft and helps the reestablishment of vascular union with the recipient site. Pedicle grafts can be of either partial or complete thickness [28]. In a clinical human research, Wood and colleagues [29] compared crestal radicular bone responses to full- and partial-thickness flaps using reentry methods. He observed that, regardless of flap technique, loss of crestal bone was dependent on thickness, with thinner radicular bone being related with more postoperative bone loss. For full- and partial-thickness flaps, the average bone loss was 0.62 mm and 0.98 mm, respectively. Grupe and Warren [29] are the originators of the term lateral sliding flap. Miller and Allen [30] remarked that this term currently commonly refers to the laterally positioned pedicle graft (LPPG). A LPPG cannot be conducted if there is insufficient gingiva lateral to the recession site. A shallow vestibule may also compromise results. Although the LPPG provides an excellent color match,

it is frequently insufficient for treating multiple recessions. To address gingival recession, pedicle grafts employing an edentulous region as the donor site have also been advocated [31]. In circumstances when the connected gingiva on the facial surfaces of two or three consecutive teeth is inadequate, the technique is particularly effective. This approach entails the formation of partial-thickness flaps around the afflicted teeth, followed by the placement of interdental papillary tissues on the buccal surfaces of the affected teeth [32]. Cohen and Ross [33] proposed a double-papilla relocated flap to cover defects when insufficient gingiva was present or where gingiva in the neighboring area was insufficient for a lateral sliding flap.

Bernimoulin and colleagues [34] originally documented the coronally positioned graft after a free graft implantation (ie, a two-stage procedure). Initially, a free autogenous soft tissue graft is inserted apically to a denuded root region. After healing, the flap is placed coronally. (1) The presence of shallow crevicular depths on proximal surfaces, (2) approximately normal interproximal bone heights, (3) tissue height within 1 mm of the CEJ on adjacent teeth, (4) adequate healing of the free graft prior to coronal positioning, (5) reduction of any root prominence within the plane of the adjacent alveolar bone, and (6) adequate release of the flap to prevent retraction during heal. The second stage of the technique employs a split-thickness dissection with mesial and distal vertical release incisions until sufficient flap mobility is achieved. The flap is sutured 0.5 to 1 mm coronal to the CEJ and a periodontal dressing is applied [35]. Comparing coronally positioned flaps to lateral sliding flaps for the treatment of localized gingival recessions. In a 6-month report, both procedures yielded good outcomes, and there were no differences in tissue coverage, sulcus depth, or gain of connected gingiva. The average soft tissue coverage was 2,7 mm, and the average recession coverage was 67%. The sole difference between the two procedures was an increase of roughly 1 mm in root exposure at the donor site of the lateral sliding flap, whereas no more recession was noted with the coronally positioned flap. Results were consistent for three years. Allen and Miller [36] employed coronally positioned single-stage flaps to treat shallow marginal recession. The flaws of Miller class I had a minimum keratinized tissue width of 3 mm and a recession between 2.5 and 4 mm. The procedure included citric acid root treatment, a split-thickness flap extending into the vestibule, and surface gingivoplasty of the papillae to generate a bleeding bed. The flaps were then sutured into place and treated. In 84% of the sites,

complete root coverage was achieved, with an average root coverage gain of 3.2 mm. Using the coronally positioned graft approach, Harris [26] also reported a success rate of 98% for root coverage in class I lesions. The technique of semilunar coronally positioned flaps was reported by Tarnow [37]. Following the curvature of the free marginal gingiva, an incision is created that continues into the papillae, staying at least 2 mm from the papilla tip on either side. The incision is made far enough apically to ensure that, following repositioning, the apical section of the flap sits on bone. The flap is replaced and maintained in place with light pressure and a periodontal dressing after a split-thickness dissection. The benefits of this approach include no stress on the flap after repositioning, no narrowing of the vestibule, no reflection of the papillae (avoiding aesthetic compromise), and no suturing [37].

CONCLUSION:

Several techniques exist for the treatment of gingival recession. However, it has been demonstrated that the combination of connective tissue grafting and a coronally positioned flap has the highest success rate. Recessions can also be treated with allograft materials and GTR procedures, particularly when patients are unwilling to provide gingiva donor locations. The tension of the recipient flap is another crucial part of the preparation of the recipient area. During the Langer and Langer treatment, the recipient area should also be carefully examined prior to suturing, as greater tension may diminish esthetic quality, impede initial wound healing, and reduce root coverage.

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