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PerioDontaLetter

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From Our Office to Yours....

The management of gingival recession defects using root coverage procedures is an important aspect of periodontal regenerative therapy.

Although it seldom results in tooth loss, tissue recession is associated with thermal and tactile sensitivity, esthetic complaints, and a tendency toward root caries.

The outcome of root coverage procedures is predictable, esthetic, and, together with the use of guided tissue regeneration, at the forefront of regenerative procedures.

This current issue of ***The PerioDontaLetter*** *reviews how to treat exposed root surfaces, and the current available surgical procedures for the coverage of exposed root surfaces.*

As always, we welcome your comments and suggestions.

Diagnosing and Treating Gingival Recession: What To Do, and What Treatments are Available

Treatment of recession defects is indicated for the prevention of root caries, reducing root hypersensitivity, enhancing esthetics, augmenting keratinized tissue, eliminating inconsistency of the gingival margin, and to enhance plaque control.

The initial phase in managing gingival recession should be eliminating or correcting etiological factors.

Once the etiological factors have been managed effectively, gingival recession can be overcome or

Figures 1 and 2. A tunnel or pinhole technique can dramatically repair severe root recession.

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Figure 3. Etiologic factors contributing to this gingival recession begin with thin buccal bone, inadequate attached gingiva, high frenum pull on the gingival margin and orthodontic tooth movement in the presence of these factors.

eliminated with a variety of effective surgical modalities. Assessing periodontal support, including bone levels and the height of soft tissue, including papilla, are essential to obtaining a successful result.

The Etiology of Gingival Recession

The anatomical factor most commonly correlated with gingival recession is a narrow band of keratinized gingiva. Other correlated anatomical features are a pre-existing lack of alveolar buccal bone, high frenum pull, tooth malposition, and gingival dimension.

Occlusal trauma and plaque-induced gingival inflammation may also contribute to gingival recession.

Iatrogenic factors include labial orthodontic movement which may result in the loss of the alveolar buccal plate and subsequent gingival recession; crown preparations which extend too far subgingivally, impression techniques involving gingival retraction, and poorly-designed partial dentures causing gingival recession around abutment teeth.

Classification of Gingival Recession

Dr. P.D. Miller has classified gingival recessions to correlate treatment prognosis with anatomical features.

Class I: Marginal tissue recession that does not extend to the mucogingival junction, with no periodontal loss in the interdental area, and the tooth is well-aligned in the arch. **With sophisticated and carefully performed treatment, one hundred percent root coverage can usually be anticipated.**

Class II: Marginal tissue recession that extends to or beyond the mucogingival junction, with no periodontal loss in the interdental area, and the tooth is well-aligned in the arch. **One hundred percent root coverage can usually be anticipated.**

Class III: Marginal tissue recession that extends to or beyond the mucogingival junction, bone or soft tissue loss in the interdental area is present, or there is malpositioning of the teeth. **Partial root coverage can be expected.**

Class IV: Marginal tissue recession that extends to or beyond the mucogingival junction. The loss of soft tissue and bone in the interdental area and/or malpositioning of the teeth is so severe that root coverage should not be attempted.

Figure 4. Multiple factors can contribute to gingival recession. Inadequate plaque control and orthodontic therapy without adequate attached gingiva can contribute to bone loss and gingival recession.

Figure 5. A thin biotype combined with inadequate attached gingiva, gingival inflammation and occlusal trauma has led to severe gingival recession.

Figure 6. A free autogenous gingival graft was utilized to repair the defects and create a strong band of keratinized gingiva.

The Decision Not to Treat, to Treat, and How to Treat

The decision not to treat or to treat recession, and the prognosis for specific sites, depends on the Miller classification of the defect, patient-specific factors, and technical considerations.

In the case of root sensitivity, if there is no concomitant esthetic complaint, a less invasive treatment is the local application of chemical desensitizing agents, although long-term resolution is only obtained with grafting.

If hypersensitivity persists or is associated with unfavorable esthetics, surgical and prosthetics can be employed effectively.

Patient-Specific Factors: Choose the surgical procedure which is most likely to be successful.

Present options to the patient and let them choose what seems right to them.

Patients should understand what caused the recession and, if clinically possible, instructed in the modification of those contributory factors.

Technical Considerations: The experience of the clinician, choice of biomaterials and surgical technique, and operator experience all factor in to the success of root coverage procedures.

In addition, published evidence on the predictability of various techniques can guide in the selection of which approach is most likely to be successful.

Surgical Procedures

The ultimate goal of a root coverage procedure is complete coverage of the recession defect, with an esthetic appearance related to the adjacent soft tissues, and minimal probing depth following healing.

There are three basic surgical procedures used in the treatment of recession defects:

1. Free soft-tissue autografts, allografts and xenografts
   - The free gingival graft
   - The subepithelial connective tissue graft
2. Pedicle soft-tissue autografts
   - Coronally positioned flaps
   - Rotational flap procedures, such as the laterally sliding flap and others.
3. Soft-tissue graft procedures in combination with regenerative procedures, which may include the use of barrier membranes and chemical stimulators such as enamel matrix derivatives.

In patients with high cosmetic expectations, coronally advanced flaps or laterally moved flaps, assuming adequate keratinized tissue, may be the best choice.

Choosing these procedures is beneficial because there is no need for palatal or other harvest sites. Consequently, post-operative pain and attendant complications is all but eliminated.

The Tunnel Technique

The unique characteristic of tunneling procedures for root coverage, also known as the supraperiosteal envelope technique, is that a tunnel is created keeping the interdental papillae intact.

The tunnel starts from the apical approach through a pinhole or coronally through the sulcus.

A connective tissue graft, acellular dermal matrix graft, or a collagen membrane is then placed in the tunnel.

The absence of vertical incisions tends to produce better esthetics and less discomfort.

AAP Consensus Report

In 2015, the American Academy of Periodontology Regeneration Workshop issued a consensus report on root coverage procedures.

Predictable root coverage is possible for single-tooth and multiple-tooth recession defects, with subepithelial connective tissue graft procedures providing the best root coverage outcomes.

For Miller Class I and II single-tooth recession defects, subepithelial connective tissue graft procedures provide the best outcomes. Results may be enhanced by the use of enamel matrix derivative and platelet derived growth factor (PDGF). There is recent evidence that platelet-derived growth factor and xenogeneic collagen matrix may be used as alternatives to autogenous donor tissue.

Subepithelial connective tissue graft, enamel matrix derivative in conjunction with the coronally advanced flap, and acellular dermal matrix graft provide long-term stable root-coverage results (>24 months).

All root coverage procedures promote concomitant significant reduction in gingival recession and clinical attachment level gain. Sub-epithelial connective tissue grafting, acellular dermal matrix grafting and xenogeneic collagen matrix-based procedures increased the density of the underlying connective tissue, but may not add to the width of keratinized tissue. An additional finding was the subepithelial connective tissue graft may be more cost effective and provide superior long-term stability.

Root Preparation

Exposed roots may exhibit surface changes, including necrotic cementum and softened dentin, resulting in the need for mechanical or chemical root biomodification, which can improve the quality of the root surface and enhance the results of root coverage procedures.

Such root preparation may include root planning and/or chemical root surface conditioning to detoxify and demineralize root surfaces, creating a more favorable environment enhancing root coverage.

Wound Healing

Most gingival augmentation procedures result in formation of a long junctional epithelium and connective tissue attachment with fibers parallel to the root surface.

Conclusion

There are many mucogingival grafting techniques to correct recession defects. These procedures are quite predictable with minimal postoperative trauma, and produce satisfactory solutions to the problems presented by gingival recessions.

Selection of the appropriate procedure, and precise, meticulous surgical technique, will provide successful and highly predictable results in the treatment of gingival recessions.

Figures 7 and 8. A connective tissue graft with a coronal tunnel access was utilized to cover the exposed roots.

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