

From Our Office to Yours...

Among the tools in the periodontist's armamentarium to establish and maintain the health, comfort, function and optimal esthetics of teeth and gum tissues is mucogingival therapy, now called periodontal plastic surgery.

Gingival augmentation and removal are methods of periodontal plastic surgery which are performed to correct defects in morphology, position or amount of soft tissue.

These surgical procedures can be used to control the symmetry, form, height and size of the gingiva.

These procedures are especially important in assisting the restorative dentist to achieve an optimum esthetic result.

This issue of **The PerioDontaLetter** addresses the indications, contraindications and techniques for gingival augmentation or subtraction.

As always, we look forward to working with you in providing our mutual patients with this important service and welcome your comments and suggestions.

Gingival Addition and Removal

The indications for gingival augmentation have changed over the years from treatment of recession to achieving optimal esthetics.

While treatment of recession is still an objective, it can now be achieved with the introduction of new root coverage techniques.

The objectives of gingival augmentation are to:

- Treat gingival recession
- Increase the width and thickness of the gingiva
- Increase vestibular depth
- Cover exposed root surfaces

- Plump edentulous ridges to receive pontics and improve soft tissue contours

The indications for gingival augmentation are:

- Recession and a minimal zone of attached gingiva, usually less than 2mm, which creates the risk of further recession. This can be minimized or avoided by creating a wider band of attached, keratinized tissue.
- Gingival augmentation is especially helpful in situations in which a change



Figure 1. This patient presented with cosmetic concerns requiring gingival addition and removal. (See Figures 2 and 3 on page 2)



Figure 2. A new provisional restoration guided the placement of connective tissue grafts to the ideal gingival height. This was one of four different surgical appointments.



Figure 3. The final result was an esthetic periodontal-restorative appearance.

in the morphology of the mucogingival complex facilitates proper plaque control thereby eliminating gingival inflammation and sensitivity.

- The depth of the vestibule can be increased by placing a soft tissue graft in conjunction with apical positioning of the mucogingival complex.
- If restorative procedures that will enter the gingival crevice are planned, such as crown margins, an adequate amount of attached gingiva (at least 2mm) is necessary to prevent gingival inflammation or recession around these restorations.
- Other restorative procedures such as removable partial dentures and overdentures can produce a mechanical, inflammatory insult in areas of minimal keratinized gingiva.
- Prominent tooth position or any orthodontic procedure

that is likely to cause a bony dehiscence in the presence of a thin periodontium.

- Tooth movement, either by orthodontics or by the natural eruptive pattern, which will result in moving the tooth outside of the alveolar housing. It's an interesting phenomenon that when teeth are moved lingually within the alveolar housing the zone of gingiva increases.
- Masking dark root surfaces or metallic abutments of dental implants. Dental implants generally have a smaller proportion of attached gingiva and a larger proportion of free gingiva compared with natural teeth. Consequently, the addition of thickened keratinized gingiva may prevent an unesthetic result.
- Gingival augmentation can correct the appearance of a tooth which appears too long in relation to the adjacent

teeth by equalizing the appearance of symmetry.

Gingival Augmentation Procedures

Surgical techniques to increase the width and thickness of the keratinized tissue are among the most predictable periodontal procedures.

Gingival augmentation is most often accomplished by soft tissue grafting.

Autografting procedures include free gingival, pedicle and subepithelial connective tissue grafting. Allograft material such as Allo-derm (acellular dermal matrix) may also be used. All of these soft tissue grafts may be combined with biologic mediators such as Emdogain, platelet rich plasma (PRP) and platelet derived growth factors (PDGF) to enhance the clinical results.

Blood supply and interproximal bone levels are the most significant concern in all of these grafting pro-

cedures. A case in point is the difficulty in covering a root which has no blood supply.

Techniques to modify root contours and enlarge the recipient bed are often used to overcome this problem.

Tobacco use and uncontrolled diabetes are among the factors which compromise gingival blood supply and therefore are risk factors for obtaining optimal results in root coverage techniques.

As tissue-engineering techniques improve, the success and predictability of gingival augmentation procedures will likely increase as well.

Gingival Removal

Gingival removal by gingivectomy or gingivoplasty is performed to treat the pathologic effects of periodontitis and other conditions that result in alterations in normal gingival form.

While gingivectomy plays a lesser role in the current repertoire of available periodontal techniques, it still remains an effective form of treatment in certain clinical situations.

The objectives of gingival removal are to:

- Eliminate suprabony gingival pockets which persist after completion of initial periodontal therapy. Reduction or elimination

of these pockets may facilitate the patient's ability to maintain periodontal health.

- Create a more esthetic gingival form in cases of excessive gingival display. In many cases, alteration of the crestal bone level in conjunction with gingival removal may be necessary to maintain an adequate biologic width.

Figure 4. 6mm of recession exposed this tooth root creating a cosmetic deformity and hypersensitive cementum.



Figure 5. A connective tissue graft was placed to cover the root to the cemento-enamel junction.



Figure 6. The final result was full coverage of all previously exposed cementum eliminating sensitivity and creating an esthetic appearance.



Figure 7. Altered passive eruption caused this patient's very gummy smile.



Figure 8. Cosmetic gingival removal exposed the anatomical crowns and created gingival harmony for an ideal smile line.

- Eliminate soft tissue craters resulting from periodontal disease.
- Reduce gingival enlargements such as Dilantin hyperplasia resulting from medications or genetic factors.
- Create clinical crown length for restorative or endodontic purposes when ostectomy is not required to preserve the biologic width.

Gingivectomy procedures are limited to areas where bony resorption is horizontal and where the apical base of the pocket is coronal to the mucogingival junction. Sufficient gingiva must be present so the surgical procedure does not produce an inadequate zone of attached gingiva or mucosal margin.

Gingivectomy and gingivoplasty may be performed with a vari-

ety of instrumentation including scalpels, lasers and electro-surgery.

Some contraindications for gingivectomy and gingivoplasty are:

- The presence of interdental osseous craters and intrabony defects
- The presence of large osseous ledges and exostoses which may leave bone exposed following removal of the gingiva
- When removal of the soft tissue would constitute an unacceptable cosmetic compromise

Clinicians must be cautious in removing gingiva in patients with a high caries rate so as not to expose tooth roots.

We hope this review of the rationale for gingival augmentation and subtraction has been helpful to you in treatment plan-

ning and determining the amount of gingiva necessary for a predictable and desirable restorative outcome and the prevention of future disease.

We continue to analyze new clinical techniques being developed and incorporated into periodontal practice with our common goal of greater predictability and benefit for our patients.

