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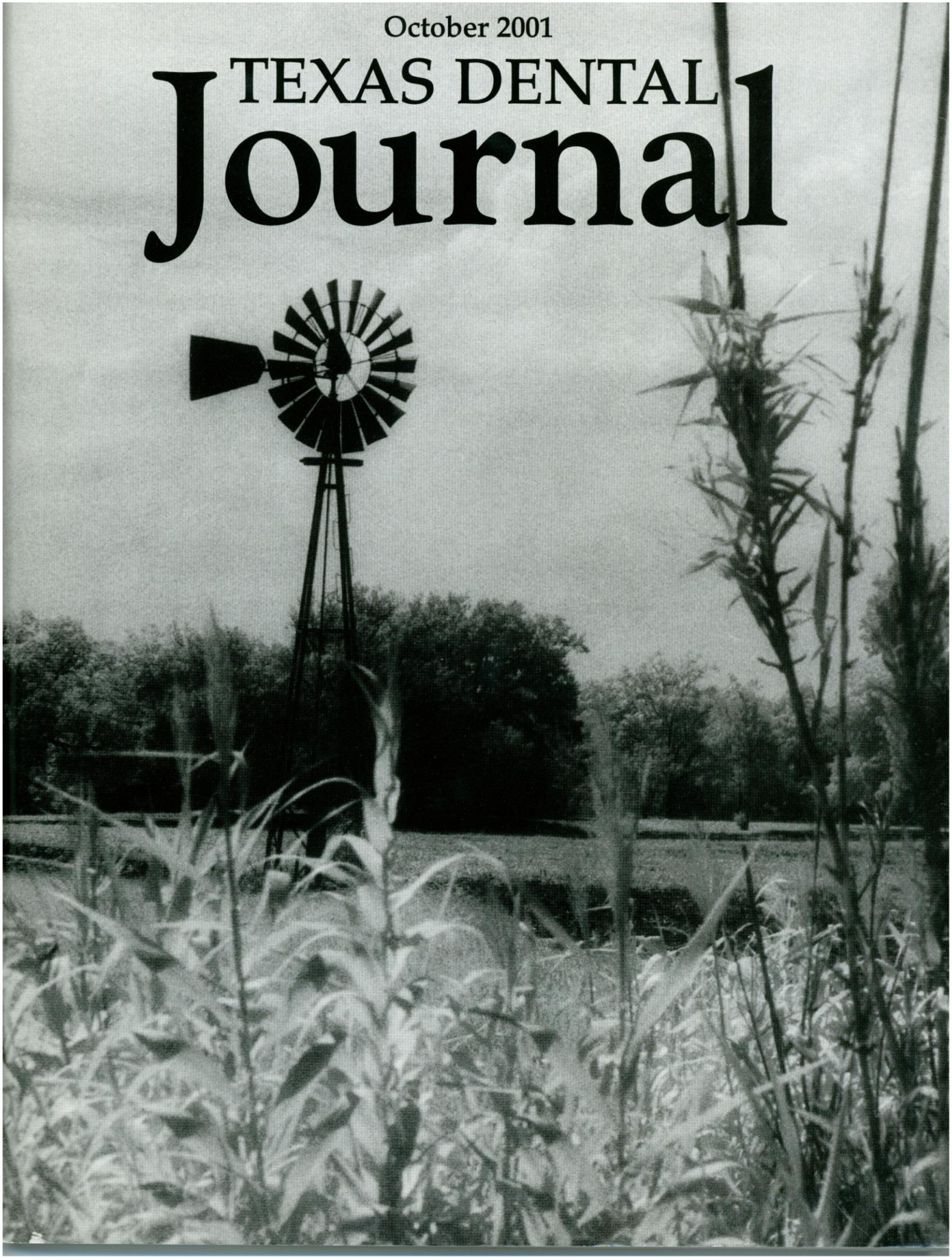

Periodonta Esthetic D

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An esthetic and pleasing patient smile is a goal we all hope to achieve with dentistry. In the past, a visit to the periodontist was feared and regarded as a prediction of a ruined smile. Modern periodontics, however, shares similar esthetic goals to those of the restorative dentist. Periodontics today focuses on enhancement of patient esthetics through mucogingival procedures in addition to the traditional treatment of periodontal disease. From soft tissue grafting to esthetic crown lengthening, the periodontist's work often complements and enhances the esthetics of a dentist's restorative treatment. It is important that the restorative dentist be aware of the different treatment options so that he or she can offer the best treatment choices to the patient.

Hammi Blue

Root Coverage

A common area of periodontal esthetics involves treating areas of marginal tissue recession. Patient's complaints of marginal tissue recession, root sensitivity and/or root caries may be addressed restoratively by the preparation of a tooth or periodontally by soft tissue periodontal procedures. Often, a patient may benefit more from soft tissue "replacement procedures" than from a restorative procedure even when caries is present because the restorative procedure may place the patient at an increased risk for gingival recession (1, 2). Today, periodontists can offer a patient many treatment options for root coverage or gingival augmentation, including pedicle flaps, soft tissue autografts, subepithelial connective tissue grafts, acellular dermal matrix grafts and guided tissue regeneration. The treatment choice for root coverage depends on many

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factors including the type and amount of recession, the number of teeth involved, the thickness and width of keratinized tissue around the teeth, the etiology of the recession, the location of the teeth, the anatomy of the palate, and patient desires.

A pedicle flap procedure can consist of lateral (3) or coronally positioned flaps (4). This technique utilizes a split thickness flap to position keratinized tissue either laterally or coronally over the recession defect. It results in ideal esthetics in tissue color match and avoids the need for a second surgical site for donor material (Figures 1 and 2). Limitations to the pedicle flap procedure include a shallow vestibule, inadequate amount and thickness of keratinized tissue, loss of interdental soft tissue or bone (5).

Free gingival and subepithelial connective tissue grafts are alternative options for root coverage procedures. Both of these procedures require a second site, usually the palate, and can treat single or multiple recession defects. A free gingival graft involves the removal of palatal mucosa including the epithelium (1.5–2.0 mm) close to the gingival margins of the teeth; the graft is then sutured to the prepared recipient bed (6). The open palatal wound is usually protected by the placement of a maxillary acrylic resin stent for a week and heals quickly. The free gingival graft can result in poorer color blend than other procedures such as the pedicle flap and connective tissue graft (7). Subepithelial connective tissue grafts involve the removal of connective tissue internally from the palate or maxillary tuberosity area through either a single incision or adjacent parallel incisions. The graft is then sutured with resorbable sutures to the recipient bed and the surrounding tissue is usually coronally positioned to increase the vascular supply to the graft (8). (Figures 3 and 4). Both techniques are successful with mean root coverage reported to be 88 percent (9, 10) with free gingival grafts and 97.4 percent (11) with subepithelial connective tissue grafts.

Other root coverage options include acellular dermal matrix grafts and guided tissue regeneration. Acellular dermal matrix is freeze dried decellularized human tissue that can be utilized as an alternative to a free gingival graft or subepithelial connective tissue graft to cover recession defects. The use of acellular dermal matrix has shown similar amounts of root coverage and esthetics to subepithelial connective tissue grafts with reported mean root coverage of 95.8 percent for the acellular dermal matrix grafts compared to 96.2 percent for

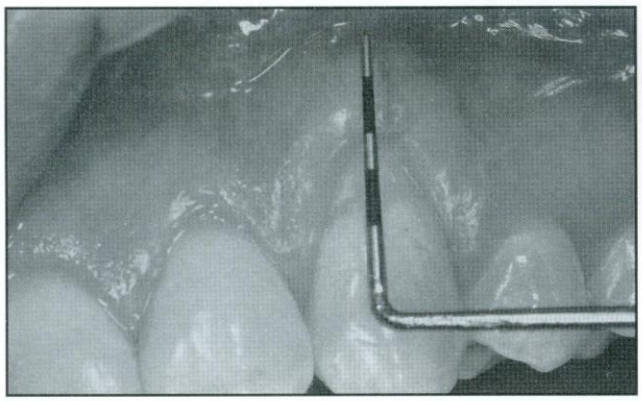

Figure 1. *Number 11 presents with 4 mm of marginal tissue recession and root sensitivity. Note 6 mm of keratinized tissue coronal to recession defect.*

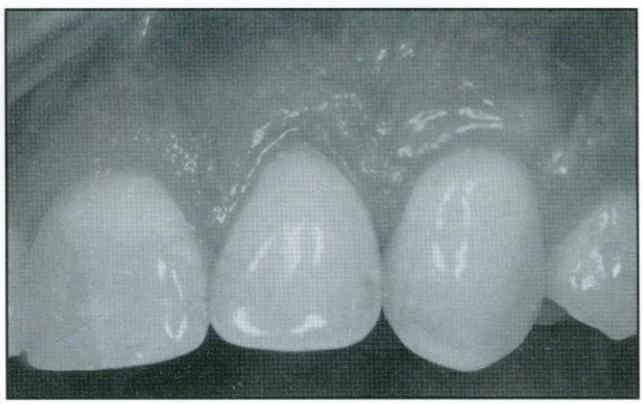

Figure 2. *Six-month post-operative presentation of #11 after coronally positioned flap procedure; 100 percent root coverage was obtained with a natural looking and esthetic result.*

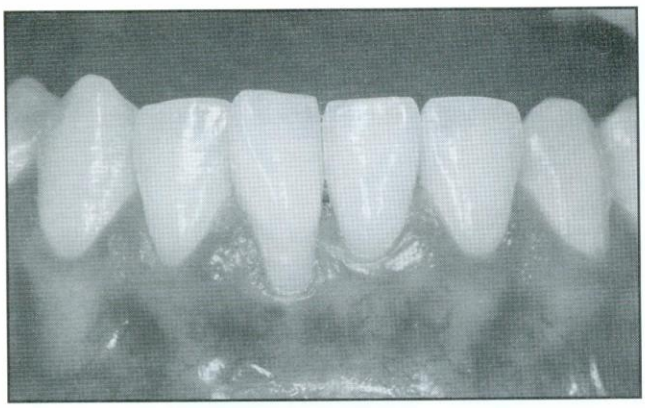

Figure 3. *Number 25 presents with 5 mm of marginal tissue recession with interproximal bone loss and malpositioning of tooth. Number 25 lacks a zone of attached keratinized tissue.*

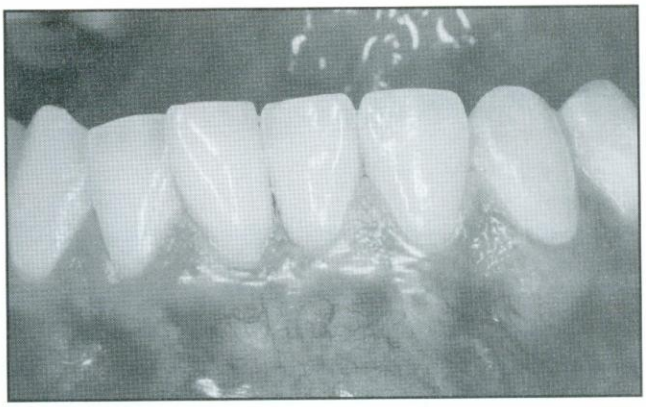

Figure 4. *Number 25 after treatment with a subepithelial connective tissue graft from palate. Note increased zone of keratinized tissue, soft tissue esthetics, and root coverage.*

the connective tissue grafts (12). However, unlike connective tissue grafts, this material has the advantage of not requiring a secondary (donor) site.

Another option in gingival recession coverage is guided tissue regeneration. Guided tissue regeneration involves the use of resorbable or non-resorbable membranes to facilitate coverage of the recession defect with the advancement of a pedicle flap. The advantages of guided tissue regeneration over other mucogingival surgery include the possibility of a regeneration of periodontal tissues rather than a long junctional epithelium attachment, improved probing attachment gain and no need for a donor surgical site. The disadvantages noted with membrane therapy include cost of the membrane, less predictable results in cases of pulling frena and shallow vestibules, and need of a second-stage surgery if a non-resorbable membrane is used (13). Thus, a vast array of treatment options are available for the patient to address gingival recession concerns.

Soft Tissue Ridge Augmentation

Another common esthetic problem is that of soft tissue ridge defects in edentulous spaces in the esthetic zone. Periodontal plastic surgical procedures have focused on and have had a powerful impact on improving the esthetics of these areas to achieve ideal restorative esthetics and harmony. A soft tissue ridge augmentation procedure to bulk out a bucco-lingual defect can

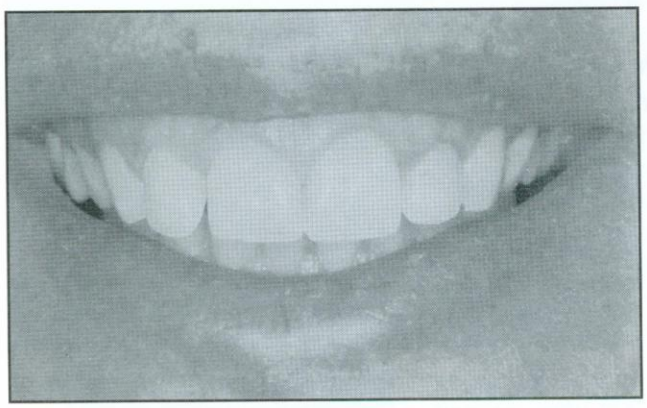

Figure 5. *Excessive gingival display due to short clinical crowns and high lip line.*

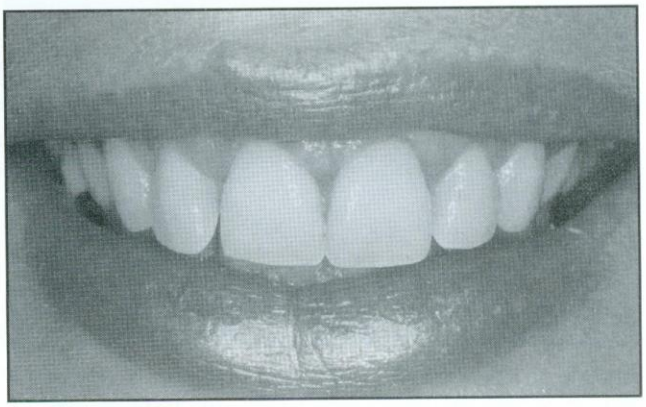

Figure 6. *Improved smile esthetics one month postoperatively after esthetic crown lengthening procedure.*

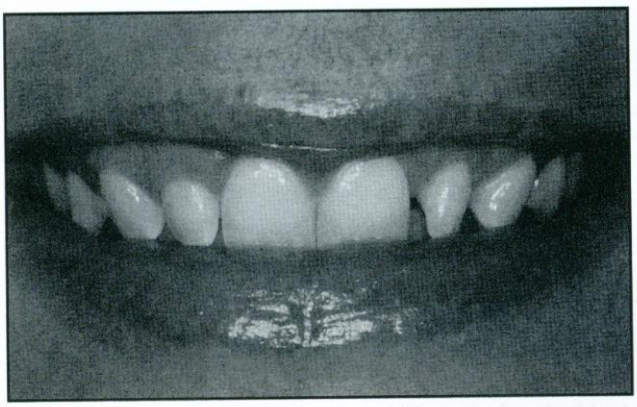

Figure 7. *Gingival asymmetry, malpostioning of teeth, short clinical crowns and excessive gingival display are noted.*

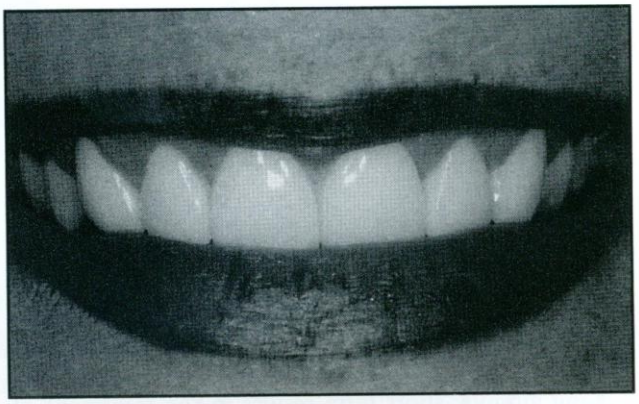

Figure 8. *Six months post-operative presentation after esthetic crown lengthening and #6-11 porcelain labial veneers. (Prosthesis courtesy of Dr. Jeff Gilson, Coppell, Texas)*

mimic the natural contours of the missing root in an edentulous area to allow the construction of a final fixed prosthesis that is indistinguishable from the surrounding teeth. A periodontal pouch procedure can be utilized with a subepithelial connective tissue graft or acellular dermal matrix graft to correct bucco-lingual and small vertical dimension defects in an edentulous space to allow for an ovate pontic fixed prosthesis (14). Thus, soft tissue augmentation enhances the esthetics of a prosthetic rehabilitation in an area.

Esthetic Crown Lengthening

Excessive gingival display is another esthetic issue addressed by contemporary periodontics. Common causes of excessive gingival display include altered passive eruption and vertical maxillary excess (15). Many patients present with a "gummy smile" or gingival asymmetry that can affect the esthetics of the restorative treatment plan of the dentist. It is important for the restorative dentist to evaluate the anatomical and clinical crown length, gingival form and symmetry, and the amount of gingival display not only in the anterior sextant but also posteriorly since the smile line extends to the molars (16). when the patient presents with short clinical crowns due to thick bony contours or due to underlying bone extending to the cementoenamel junction (CEJ), an esthetic crown lengthening procedure is indicated to achieve ideal esthetics. This procedure entails an internal bevel gingivectomy extending to the CEJ of the natural anatomic crown on the buccal followed by a full thickness buccal flap reflection with osseous surgery to establish the biologic width from the CEJ and to reduce thick bony areas. Immediate patient satisfaction is achieved due to the exposure of the patient's natural crowns and decreased gingival display. (Figure 5 and 6). If the patient has tooth malpositioning, preexisting short restorations and/or short anatomic crowns, and the treatment plan includes full-coverage or veneer restorations, an esthetic crown lengthening surgery can be performed to enhance the smile esthetics by obtaining ideal restorative tooth lengths and decreasing the amount of gingival display (16) (Figures 7 and 8) Restorative treatment should then commence at the earliest, 3 months post-surgically and ideally 6 months after the procedure to allow time for marginal tissue maturation and establishment of biologic width. If restorative treatment is done prior to 6 months post-surgically, there is the risk of an apical shift of the marginal tissue, which can result in restorative margin exposure and less than ideal esthetics (17).

Clearly, contemporary periodontics encompasses more than just scaling and root planning and osseous surgery. Periodontal plastic surgery offers an exciting array of options for treatment of mucogingival esthetic problems. With a good working relationship between the periodontist and the restorative dentist, we can achieve esthetically harmonious and satisfying results for our patients.

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