

process was repeated for another 20-minute session. During this first appointment, her teeth had whitened from A-3 to B-1. Tooth No. 9 was still considerably darker, and the demineralization marks were even more distinct. We were ready to continue with restorative treatment.

#### Pre-operative labwork

Maxillary and mandibular alginate impressions were taken and poured up in stone. The pre-operative models, cosmetic simulation, and a bite registration were sent to the laboratory for the fabrication of diagnostic wax-ups. The diagnostic wax-up shows any changes to be made in the contour and width of the abutment teeth. The incisors were lengthened and reshaped in ivory wax as directed by the digital images. The wax-up was then duplicated to facilitate the manufacture of a preparation guide and a hard/soft matrix. Together, the image-inspired wax-up and the simulated picture allow the dentist and the patient to see how treatment will look when finished. These two tools provide the accurate communication between the dentist and the laboratory necessary to obtain superior esthetic and functional results. Once the patient has approved the cosmetic image and the wax-up, the dentist is on his way to providing transitional and final restorations that will fulfill the patient's esthetic desires.

#### Shade selection

The key to successful shade-matching and duplication lies in following a standardized process and utilizing the advanced technology available, including shade-taking devices and digital photography. The Shofu Shade Eye-NCC (Figure 4) is a highly accurate, electronic shade-taking device that deduces the base shade of the tooth to be measured and provides a printout with information of that shade, value, and hue. It can be used with any

porcelain system, but actually prints out an exact porcelain recipe for use with the Shofu Vintage Halo porcelain. By communicating this information to the laboratory for duplication, you can create accurate, realistic restorations that are indiscernible from its natural adjacent dentition. This is practically fool-proof when you accompany the recipe with a digital photograph that captures the appropriate shade tab next to the teeth to be matched, showing any defining characteristics (such as translucency) that will make the restorations blend in as they match the texture and contour of the

unprepped teeth.

In this case, we measured the base shade of the untreated maxillary cuspids, and instructed the laboratory to go a half-shade lighter for the final restorations.



Figure 4

#### Preparation

Anesthesia was administered locally. The endodontic access was opened palatally on No. 9 to make post space for reinforcement of the tooth. Since it is preferable to conserve as much sound coronal tooth structure as possible, this tooth would be treated with a bonded composite post, the access restored with composite, and the tooth prepared for a conservative partial crown. A twist drill rotary instrument was used to remove gutta percha to make post length equal to the height of the anatomic crown, leaving 4 mm of gutta percha at the apex to protect the apical seal. After the filling material was removed, the canal was reshaped in order to remove undercuts and prepare the canal

for cementation of a prefabricated size 1 DenMat CorePost white fiber post. The size of the post should be no more than one-third the diameter of the root, leaving slight space for the adhesive resin cement and leaving the canal walls at least 1 mm thick. The canal was etched, thoroughly rinsed, and blotted dry with large paper points. The post also was etched, rinsed, and treated with a silane coupling agent. Unibond A & B (DenMat) was applied to the canal and the post, followed by air drying to prevent pooling. The post and canal were light-cured using the Sapphire Xenon Power Arc curing light (DenMat). Gerestore was syringed into the canal carefully to avoid creating air bubbles. The post was then seated with gentle but firm pressure, and the excess cement was removed using a microbrush dipped in bonding resin. The Sapphire curing light tip was placed directly on the post to cure. Single Bond and Supreme (3M/ESPE) were used to fill the access cavity, then cured.

Preparation of the four incisors was then initiated using diamond burs from the Shofu Contemporary Cutting Kit (Figure 5). With the high-speed ElectroTorque KaVo handpiece, a small round diamond (0872-1) was used to outline the peripheral margins of the preparations (Figure 6). By scoring the facial surface of the incisors with the depth cutter (0897-1) (Figure 7), smooth and uniform tooth structure removal using a coarse tapered diamond (0835C-1) was facilitated (Figure 8). As tooth nos. 9 and 10 were prepared, it came time to address the gingival contour issues of the inflamed interproximal gingiva.

#### Gingival recontouring

The creation of a dazzling, esthetic smile in the anterior smile zone is greatly influenced by critical subtleties in gingival margin height, symmetry, and embrasure shape. This soft-tissue restoration interface must be free of inflammation, with appropriate contours of the gingiva and placed restorations to maintain periodontal health. The gingival contour even affects the illusion of optimal tooth alignment and symmetry of

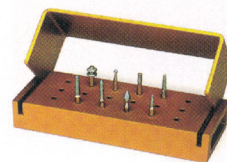


Figure 5 (above)

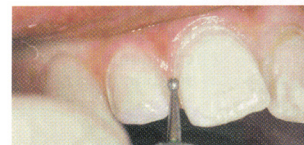


Figure 6 (above)



Figure 7 (above)



Figure 8 (above)



Figure 9 (above)

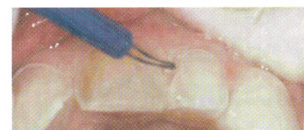


Figure 10 (above)



Figure 11 (above)



Figure 12 (above)

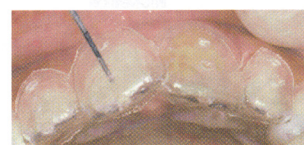


Figure 13 (above)