

Laboratory Realities

USING PLATINUM FOIL TECHNIQUES TO CREATE NATURAL TOOTH COLOR

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A variety of techniques can be used to facilitate the fabrication of functional, natural-looking restorations. With the wide range of bonding technologies available in the clinical armamentarium, porcelain veneers can serve as a durable and highly aesthetic treatment option for patients seeking to improve compromised dentition. If veneers are being fabricated to treat discolored or mismatched teeth, the goal of the dental technician should be to replicate the necessary thickness based on the preparation design and clinical parameters, while accounting for critical elements such as occlusion and function. Veneer fabrication can be completed through the application of multiple porcelain layers that are applied and then baked to a refractory model. The platinum foil technique, however, may yield superior results and minimize the likelihood of complications during transfer from the refractory model. In this procedure, the platinum foil veneer is fabricated on the same master model upon which the final restorations will be checked.

Case Presentation

A 55-year-old female patient presented with crowding, malalignment, and compromised aesthetics in the anterior region. Evaluation revealed uneven shading, size discrepancies, and compromised width-to-length ratios. The teeth were prepared for porcelain veneering. The clinician took care not to overprepare and compromise final restorative strength, or underprepare and further complicate the development of ideal aesthetics and color. The author chose to implement the platinum foil technique on both the facial and interproximal surfaces. Throughout the fabrication process, the technician took into consideration various factors that may have affected the final results (eg, emergence profile, contours, surface texture, incisal silhouette). The outcome was highly aesthetic and exceeded patient expectations. Use of the platinum foil veneering technique achieved proper contour, contacts, and color for highly successful results.



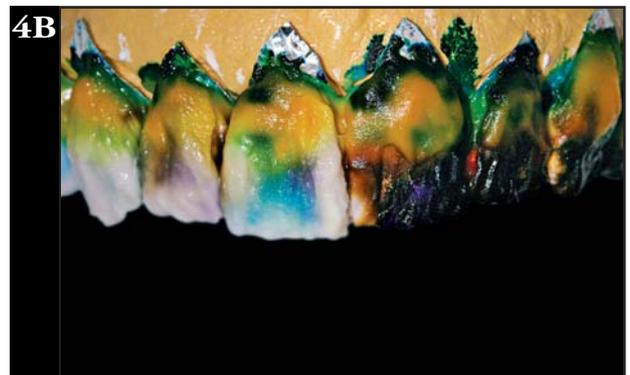
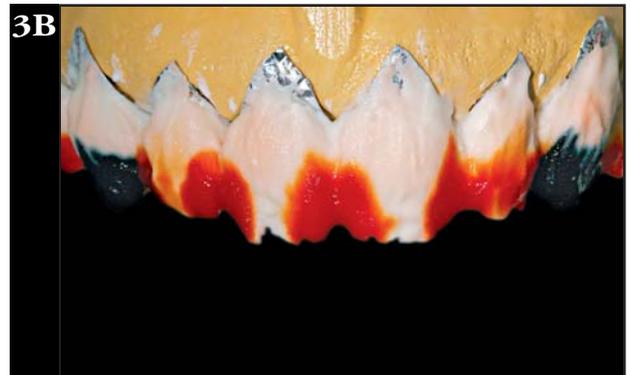
Figure 1A. Preoperative facial view demonstrating unaesthetic dentition, mismatched color, and uneven tooth-size.

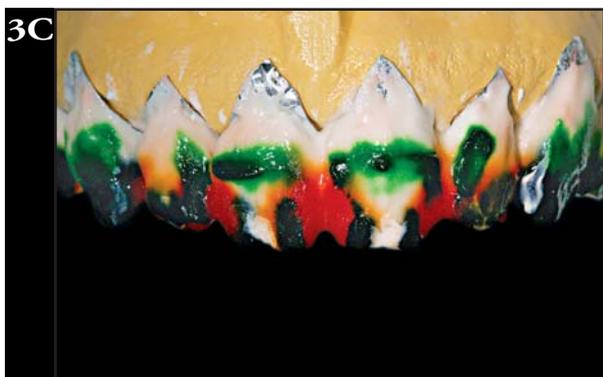
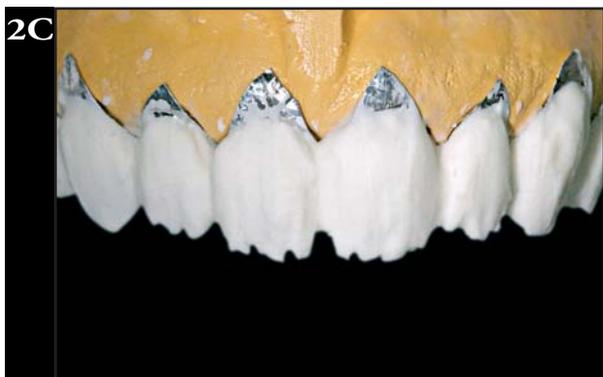


Figure 1B. Facial view of postoperative results, exhibiting the aesthetic results achieved through the platinum foil technique.

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Figures 2A,B,C. Following careful tissue retraction using a double cord technique, the clinician took care to apply conservative, uniform guidelines during preparation. Uniform facial preparation of 0.5 mm was achieved, and 1 mm of incisal reduction was secured. Chamfer margins were developed to facilitate sufficient porcelain retention, and impressions were captured. In the laboratory, a working model was created, and the platinum foil technique was initiated to facilitate fabrication of the feldspathic veneers (ie, GC Initial, GC America, Alsip, IL). An A1-shaded dentin porcelain was then applied directly to the foil to allow masking of the dark-colored tooth substructures.

Figures 3A,B,C. Following application of the dentin layer, cervical translucency and enamel opalescence were added to the facial aspect. In order to create subtle mamelons, a translucency modifier was also used. The technician's objective was to develop an aesthetic shade gradient that would mimic the subtle nuances within natural dentition. This was achieved by the use of six different shades of porcelain (ie, A1 Base shade, FD 91, E03, mamelon, TM2, and CLF) to create a lifelike appearance. The desired length and width characteristics were also developed at this stage to ensure improved facial harmony.

Figures 4A,B,C. A cervical translucency layer was initially placed to provide optimal gingival hue. The neutral translucency layer was then applied, followed by an enamel overlay to the exterior aspects of teeth #5(14) through #8(11). The final buildup was completed, followed by the application of an enamel effective over the labial surface to ensure sufficient luster and shine following final firing. Special care was taken to ensure development of natural-looking incisal translucency using translucent powders in this region for optimal light transmission. Prior to glazing, marginal fit and accuracy were ensured by thoroughly pressing the veneers to the underlying foil.

Figures 5A,B,C. The 10 final restorations (ie, nine veneers and one zirconia crown) were evaluated on the master model to verify symmetry, tooth contour, shape, marginal fit, and integration. The restorations were cemented using a resin-reinforced glass ionomer cement (eg, Choice 2, Bisco Inc, Schaumburg, IL; Fuji Plus, GC America, Alsip, IL) to ensure maintenance of optimal translucency, masking of the underlying tooth structures, and sufficient retention. A postoperative evaluation demonstrated harmonious color, texture, and aesthetics.

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