

Minimally Invasive Makeover: Platinum Foil Technique



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Figure 1. The patient's shade, translucency and texture are checked in the laboratory during a custom shading appointment.



Figure 2. A representation of the preparation guide design is created with a computer image.



Figure 3. With the platinum foil technique, the cervical translucency (Cervical Translucency No. 22) and dentin porcelain (Flo Dentin No. 91) are layered onto the restoration first. (Initial Ceramic System [GC America] was used for the fabrication of this case.)



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INTRODUCTION

A public person who meets with people every day will take special care in how she presents herself. In fact, how well one is listened to in the business world is directly related to one's appearance—it can even influence a customer's decision. "In a highly mobile society, where first impressions are important, and selling oneself is the most highly cultivated 'skill', the construction of appearances becomes more and more imperative."¹ So then, we can reasonably assume that a young, attractive woman who takes care of her appearance will pay close attention to her smile. She does this knowing that the effort taken with her teeth is something that is noticed by one and all in the business world.

This article revolves around a patient in her mid-30s who travels in her job as a real estate broker. She has a large client base, with regular referrals as an integral portion of her success. Especially during consultations, when her new business relationships are formed, confidence in her personal presentation is important.

CASE REPORT

Diagnosis and Treatment Planning

The patient was not happy with her maxillary teeth (Nos. 6 to 11). Her complaints were: dull color, old interproximal composites, and misalignment issues. She wanted her smile to be brighter and felt that tooth No. 11, in particular, was "tucked in," making it appear smaller than her other teeth. Preoperative x-rays were taken and, as expected, showed no evidence of decay. Her tissue condition was good.

A doctor-patient consultation was held regarding her expectations.

Before starting a cosmetic case such as this one, communication among the doctor-technician team and the patient is the key to a good outcome, most would agree. The doctor passed on the patient's information for a consultation with his dental laboratory technician. The technician noted that teeth Nos. 8 and 9 were too prominent, with No. 9 being longer than No. 8, creating an uneven appearance to the mesial incisal edge. He also thought that the cervical area of tooth No. 10 was undercut, and that tooth No. 11 presented with the incisal cusp pointing inward and short in appearance. In addition, he felt that teeth Nos. 8 and 9 did not match up symmetrically, either vertically or horizontally.

When a clinician undertakes the task of passing on patient information to the dental laboratory technicians, if the patient wasn't clear about her wishes, it could lead to a misunderstanding. A treatment planning (diagnostic) wax-up is an excellent tool and helps to improve the visual message for the patient. However, it does nothing for the discussions around the issues of color.

A good shade-taking tool will improve the dialogue among all 3 parties (doctor, technician, and patient) and assist in achieving all the goals that everyone has in mind related to the outcome of the case.² It also enhances the dental technician's ability to create beautiful color and shape in porcelain. One of the problems a dental technician will encounter with classic shade tab colors is that they were created using com-

posite material with about 4.0 mm of thickness.³ Crowns, however, that are made with porcelain powder require approximately 1.2 to 1.5 mm of thickness. With basic differences between the width of the restoration and the material used, it is nearly impossible to predict a matching outcome for a restoration. "If the tooth is to be restored with a full gold crown, the restoration need only be 0.5 mm in thickness (as gold is very strong), and therefore, a minimum of only 0.5 mm of space needs to be made for the crown to be placed. If porcelain is to be applied to the gold crown, an additional minimum of 1 mm of tooth structure needs to be removed to allow for a sufficient thickness of the porcelain to be applied, thus bringing the total tooth reduction to minimally 1.5 mm."⁴

With regard to this case, we will discuss the platinum foil and porcelain layering techniques that were used to achieve the goals which were laid out previously in this article.

Laboratory Procedures

Figure 1 shows the patient's preoperative appearance before preparation. With the LSK121 Chair Side Shade Guide (developed by Luke Kahng, CDT [Oral Prosthetics]), the dental technician checks the surface texture and translucency color for the adjacent teeth. The texture possibilities on this particular page include: dull (TE-1), rough (TE-2) or shiny (TE-3). The patient's texture was determined to be shiny or (TE-3). Figure 2 is a computer image representation of the

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Figure 4. The appearance after first firing.



Figure 5. Base dentin is applied.



Figure 6. Enamel opal is layered on top of the dentin.



Figure 7. Translucency modifier color is layered on top of the dentin.



Figure 8. The enamel effective color is layered onto the translucency modifier.



Figure 9. The final enamel color is applied next before baking the restorations at 890° C.



Figure 10. The appearance of the restorations after baking is bumpy and coarse, similar to an orange peel.

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prep guide design. The platinum foil technique is demonstrated (Figure 3) with an application of Cervical Translucency No. 22 and Flo Dentin



Figure 11. Before glazing, the final buildup is applied.



Figure 12. After applying glaze, the restorations are fired at again at 890° C.



Figure 13. A Robinson brush takes care of the polishing with Gradia (GC America).



Figure 14. After polishing, the restorations' appearance is shiny.

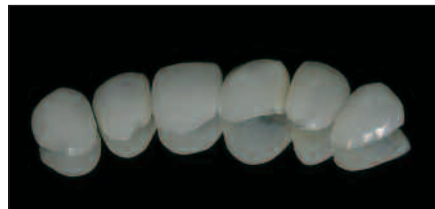


Figure 15. The finished restorations.



Figure 16. The porcelain ceramic teeth from root to incisal edge as fabricated (Luke Kahng, CDT) demonstrate shape, mamelon, and contour.

No. 91 (the Initial Ceramic System [GC America] was used for the fabrication of this case) applied to the incisal edge. After the first firing, the veneers will have the appearance seen in Figure 4. It is important to mask the incisal edge area with opacous dentin to create translucency. Without this step, our restoration will end up with uneven or no translucency.

In Figure 5, the base dentin A-1 with bleaching color has been applied. Her final color had a BO base, with saturation at the gingival, body and incisal one third. One does not want to allow one color to dominate a final restoration's appearance or it will appear to be monochromatic and not lifelike.

Enamel Opal was then layered on top of the dentin (Figure 6), followed by the Translucency Modifier (Figure 7). In the next step, Enamel Effective color was applied (Figure 8) with the final enamel color layered on top (Figure 9), before baking the restorations at 890° C. The appearance after the second firing is similar to that of an orange peel, rather bumpy and coarse (Figure 10). The final porcelain buildup was placed on all sections of the restorations with (Figure 11) natural glazing to follow. The restorations were baked again at the same 890° C temperature (Figure 12). A natural Gradia (GC America) color was used to polish the restorations, accomplished with a Robinson brush (Figure 13). Once the correct polishing techniques are utilized, the restorations are shinier (Figure 14). The 6 completed veneers were then placed on a mirrored surface and photographed (Figure 15).

For quite a few years, the author has enjoyed studying and mimicking natural teeth. As a continuing student of tooth morphology, he is especially interested in natural contour, shape and mamelon. In his recreation of teeth (Figure 16), he (and his laboratory team) will often exaggerate these characteristics as an artistic expression.

He has noticed, though, in speaking with patients about their preferences, they want natural-looking teeth, but bright color. In fact, "Teeth whitening is the No. 1 requested cosmetic service today and its popularity continues to soar," according to the American Academy of Cosmetic Dentistry.⁵ In the final photographic view (Figure 17), note that the symmetry, improved canine length, and brighter shade have all been achieved



Figure 17. Final view: symmetry, canine length, and brighter smile.

with the delivery of the 6 new veneers.

CONCLUDING REMARKS

In the end, the patient was happy with the results. The outward aspect of her smile is now more feminine and brighter. The increased length for teeth Nos. 8 and 9, from gingival to incisal edge, changed her facial contour outline and improved confidence in her smile. If we again address her stated concerns, we can ask ourselves if they were addressed successfully:

She complained of dull color. *This was camouflaged by the technician's porcelain layering techniques. The color presentation is now bright and clean.*

She did not care for the interproximal composites on teeth Nos. 8 and 9 as they contributed to the dull color. *This was replaced with the newly created veneers.*

An uneven incisal edge bothered her, especially between the 2 centrals. *The veneers contributed to an increase in length which addressed the issue of size and shape for her teeth.*

Number 11 was "tucked in," making it appear smaller than the other anterior teeth. *By shaping and contouring her teeth correctly through veneer placement, the teeth are even and equal in size and shape.*

The patient can face the business world knowing that her smile is the best it can be. Her presentations will be delivered with the confidence required to "get" the customer!

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Disclosure: Dr. Ballis reports no conflicts of interest.

Mr. Kahng is the owner of LSK121 Oral Prosthetics, a dental laboratory. He has published over 40 articles in major dental publications. He is the author of the recently published *Anatomy from Nature*, with 50 illustrated pages of full contour wax-ups, stone models and porcelain teeth, all re-created using natural teeth as a guide. His *Esthetic Guide Book* features 31 patient cases from a single anterior tooth to a full mouth reconstruction. He invented the *Chair Side Shade Selection Guide* and the *Simple Enamel and Prep Color Guide*, featuring over 150 zirconia fabricated restorations based on patient enamel and translucency research, with patent pending. His latest book, *Smile Selection + CS³ Clinical Cases*, will be published in 2010. He can be reached at (630) 955-1010 or luke@lsk121.com.

Disclosure: He is the founder and owner of LSK121 Oral Prosthetics, a dental laboratory in Naperville, Ill. He is the creator of the LSK Training Manuals I and II, LSK121 Treatment Plan Wax-Up Technique, LSK Patient Education Brochures, and the Chair Side Shade Selection Guide (patent pending).

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