

Delivering a Hollywood SMILE

Improving anterior esthetics has always been and will continue to be a challenge to the restorative dentist. Increased demand for esthetic restorative treatment has challenged the dentist, laboratory technician, and manufacturer to develop techniques and materials to satisfy the discerning patient. Utilizing these modern materials and following principles of smile design, the restorative team can succeed in restoring a smile to proper form, function, and health.

BEFORE



1

(1) Pre-operative smile view.
(2) Pre-operative retracted view.



2

Combining modern materials and the universal principles of smile design allow dramatic changes in the esthetic zone.

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The case presented in this article demonstrates the significance of smile design and material selection in the esthetic zone.

Case presentation

A woman in her late 40's presented to the practice dissatisfied with the appearance of her smile and overall looks (**Figure 1**). She commented that she felt that her existing restorations (**Figure 2**) were unattractive because of size, shape, and color and that these restorations were making her look much older than her actual age. She wanted a very white "Hollywood" smile!

Treatment planning

Initial diagnostic evaluation consisted of a series of digital images with study casts, a centric relation bite record, and a facebow transfer. The patient had porcelain veneer restorations present on her maxillary anterior teeth Nos. 5-12 and porcelain fused to metal bridge on teeth Nos. 2-4. Overall vitality and translucency appeared to be compromised with these restorations. A smile guide book was used to complete the smile analysis necessary for pre-designing the case.

The size and shape of her existing restorations was too short, flat, and square. The patient preferred a softer more feminine look that completed her smile. To achieve this, the shape selected would be rounder, and the embrasures between the teeth would be larger. The existing relationship between lip line edge and the incisal edge of the teeth suggested that the patient could tolerate lengthening of the incisal edges. Because the patient's complaint was extreme dissatisfaction with the whole appearance of her smile and the previously placed restorations, we decided to restore both her maxillary and mandibular dentition.

Preparation

When informed consent was obtained from the patient, treatment was initiated.

After anesthetic was administered, a crown-removing bur was used to remove the maxillary anterior restorations from teeth Nos. 5-12. Utilizing a crown-spreader hand instrument, the existing restorations were removed with a rotation to dislodge the porcelain from the underlying tooth. The bridge from teeth Nos. 2-4 was also removed in a similar

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CASE DESIGN

(3) Close-up of veneers on working model. (4) Maxillary veneer restorations. (5) Mandibular veneer restorations.

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fashion. Due to severe tetracycline staining of her natural teeth, it was essential to place the margins subgingival. Utilizing Expasyl (Kerr Corp., www.kerrdental.com) we not only controlled hemorrhaging, but also achieved gingival retraction. Because the patient had a sensitive gag-reflex, a very quick-set impression material was selected (Take One Super-Fast, Kerr Corp., www.kerrdental.com) to take the impression. Again, because of the severe tetracycline staining, a stump shade (Ivoclar Vivadent, Inc., www.ivoclarvivadent.us) was selected for each tooth to assist the laboratory technician in creating natural looking restorations.

Provisionalization

A provisional restoration was significant to the overall treatment because it eliminated the guesswork of what the final restoration will look like. It was made from an impression of her existing teeth and restorations. Using Fill-In (Kerr Corp., www.kerrdental.com) temporary material, this mold was quickly filled and placed on the patient's prepared dentition. Within minutes, the temporary was fabricated, and the patient was released with her new smile. Final trimming of the margins was accomplished with fine diamond burs.

The next day, the patient returned for evaluation of size, shape, color, and bite. Already the patient exhibited excitement and confidence with her provisional restorations. Information was recorded and the patient was informed to rinse with Peridex to keep her gingival tissues healthy.

Laboratory communication

Color photographs and diagnostic data were also obtained and forwarded to the laboratory for the fabrication of the final restorations. During the laboratory phase, the full-arch polyvinyl siloxane impressions were used to create a master model on which the restorations would be based (Figure 3). The master model was segmented into individual dies that were trimmed and pinned to determine the manner by which the final restorations would integrate with the existing soft tissue. A silicone incisal matrix of the provisionals was created to guide the placement of incisal effects and edge position in the subsequent ceramic build-up. Additionally, comprehensive color mapping ensured that the definitive esthetic result of the

restorations would meet the patient's expectations.

Cementation

Before try-in of the definitive restorations (Figures 4 & 5) to verify fit and shade, the provisional restorations were removed sequentially starting from the maxillary anterior region. Any remaining cement was cleaned off the prepared teeth and bleeding from the gingival tissues controlled with Expasyl (Kerr Corp., www.kerrdental.com) paste (Figures 6 & 7). After the patient was shown the retracted view for acceptance, the cementation process was initiated. The restorations were treated with phosphoric acid (37%) for 20 seconds, rinsed, and silanated with a porcelain primer (Kerr Corp., www.kerrdental.com). The prepared dentition was cleaned with chlorohexidine 2% (Consepsis, Ultradent Products Inc., www.ultradent.com) for 15 seconds and rinsed to remove any contamination during the temporary phase. The preparations were treat-

flossed and any excess luting cement was carefully removed. When most of the excess cement was removed, the restored dentition was completely light-cured from both facial and lingual sides. Any resid-

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“Due to severe tetracycline staining of her natural teeth, it was essential to place the margins subgingival.”

IMPRESSIONING



(6) Expasyl power applicator.
(7) Gingival tissue controlled with Expasyl.



ed with All-In-One Bond (Kerr Corp., www.kerrdental.com) adhesive according to the manufacturers' protocol. The adhesive was cured for 10 seconds per tooth with an L.E.Demetron II (Kerr Corp., www.kerrdental.com) curing light.

Insure-Light Opaque veneer cement (Cosmedent, www.cosmedent.com) was applied to the inner surface of the restorations. The restorations were then placed on the preparations and, while firmly holding the restorations in place, a rubber tip applicator removed all excess luting cement from the margins. A thin layer of glycerin was applied to the margins to prevent an oxygen inhibiting layer from forming. The restorations were tacked at the gingival margin.

While the restorations were still firmly held in place, the restored dentition was

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ual cement was removed with a No. 15 scalpel or finished with a fine diamond and polishing points. The posterior porcelain-fused-to-metal restorations were seated with MaxCem (Kerr Corp., www.kerr-dental.com) dual cure resin cement. Af-

ter complete polymerization of the restorations, the occlusion was verified and adjusted (**Figure 8 & 9**). The overall health and structure of the soft tissue and restorations was very good (**Figure 10**). The patient was extremely satisfied with the de-

finitive results.

If the challenges of cases such as this are carefully diagnosed and analyzed, and a treatment plan is designed, they can be addressed successfully, even with the esthetic demands of today's patients. The key

THE RESULTS



(8) Post-operative occlusal view of seated maxillary restorations. **(9)** Post-operative occlusal view of seated mandibular restorations. **(10)** Post-operative retracted view of the final restorations.

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to the process is understanding what the patient demands and knowing the most appropriate, durable, and predictable restorative materials to facilitate the case. All patients deserve to feel understood and get what they want. By following certain guidelines in smile analysis, material selection, and laboratory instruction, the dental provider can exceed any esthetic challenge! **DPR**

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