

## DIRECT RESIN VENEERS— THE ART OF CREATING A SMILE



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### INTRODUCTION

Direct resin veneers are one of the most challenging yet rewarding treatment options in cosmetic dentistry. When taken to a high level of excellence, they can produce unparalleled esthetics as well as function. Because patients can see an immediate transformation, this treatment creates tremendous patient satisfaction. Direct resin veneers can give the dentist full artistic control over the esthetic outcome of the case, resulting in a smile that rivals those created by nature. They also can be extremely conservative, with minimal tooth preparation required. This process allows the dentist to utilize and showcase all of her or his skills in creating a smile directly chairside.

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### HISTORY

The patient was 29 years old and in excellent health, with no significant medical history. She had had a rhinoplasty when she was a child to correct an injury from a baseball accident. Years later, a second rhinoplasty was performed, leaving her nose slightly deviated to her right (Fig 1).

### FINDINGS AND DIAGNOSIS

Diagnostic records were taken and a full-mouth examination was done. Records included a full-mouth set of radiographs, the 12 photographic views required by the American Academy of Cosmetic Dentistry, models, facebow, and occlusal records.

### CLINICAL FINDINGS

Clinical examination of the patient revealed good periodontal health. She had very little gingival inflammation, and her gums were healthy with very

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Figure 1: Before; facial view.

slight bleeding upon probing. There was no decay upon radiographic and clinical examination. There was no sign of pathological wear on her teeth. Her bite classification indicated that she had a Class II molar relationship with a slight centric relation-centric occlusion discrepancy. However, the temporomandibular joints had no history of pain or sounds, and were comfortable upon loading using bimanual manipulation.<sup>1</sup> Her lower front teeth had existing composite resin to close a diastema between #24 and #25, and there also were some Class III composite resins on #23 and #24.

#### ESTHETIC FINDINGS

The esthetic findings included teeth that were tilted lingually and not filling out the buccal corridor, a small diastema between the maxillary centrals, a “gummy” smile that exhibited slightly more gingiva on the right side than the left side, plus a midline and an occlusal plane that were slightly tilted to the patient’s left. The incisal edge and gingival height of #8 also were slightly longer than #9.

#### TREATMENT PLAN

The treatment goal was to give the patient a bigger smile to fill out the buccal corridor (Figs 2 & 3). Because her teeth were tilted lingually it required very little removal of tooth structure, resulting in much stronger bond strength with enamel. The treatment plan included doing tissue recontouring to give the patient a less gummy smile and a balanced gingival height. Ten direct resin veneers would then be done to address her primary chief concerns: To correct the lingually tilted teeth; to close the diastemas; and to give her a brighter, whiter smile. Home whitening would be done so that her lower opposing teeth would match her upper veneers.

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Before the actual preparation and treatment appointment, the models were mounted and waxed up to full contour. A model and stent of the wax-up was fabricated to facilitate an intraoral mock-up. A mock-up using the resin shade of the pa-

tient’s choice was done directly on her teeth to give her a preview of her new smile (Fig 4). This mock-up allowed her esthetic needs to be coordinated with her existing occlusal scheme. An impression was taken of this intraoral mock-up and was cross-mounted on a semi-adjustable articulator against her opposing model. This would provide a guide to better prepare for the actual treatment appointment.

#### ARMAMENTARIUM

- MiniStar vacuum-forming device (Great Lakes Orthodontics, Tonawanda, NY)
- SoftLase soft tissue laser (Zap Lasers; Pleasant Hill, CA)
- EOS Rebel digital camera (Canon USA; Melville, NY)
- 2.5x magnification loupes (Designs for Vision; Ronkonkoma, NY)
- Opalescence 20% whitening gel (Ultradent; South Jordan, UT)
- Ultrapak retraction cords (Ultradent)
- 37% phosphoric acid etching gel (Pentron; Wallingford, CT)



*Figure 2: Before; small, narrow smile. After; broader, more attractive smile.*



*Figure 3: Before; occlusal view. After; anatomy and embrasures seen from occlusal view.*



*Figure 4: Smile view of a mock-up done to give the patient a preview of her smile and to work out any occlusal problems.*



*Figure 5: Tissue recontouring done with a laser to slightly lift and even the gingival level.*

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*Figure 6: Teeth are prepared with minimum reductions, keeping most of the bond on enamel.*



*Figure 7: Using the stent as a guide, the first layer of composite is placed.*

- Clearfil SE Bond bonding agent (Kuraray America; New York; NY)
- composite placement instruments (Cosmedent; Chicago, IL)
- Creative Color tints and opaque shades (Cosmedent)
- Renamel microhybrid and microfill composites (Cosmedent)
- ViscoStat Clear hemostatic gel (Ultradent)
- 30% hydrogen peroxide
- diamond burs (Brasseler USA; Savannah, GA)
- #ET9 and #7406 burs (Brasseler USA)
- Vision Flex discs (Brasseler USA)
- Ceramiste points (Shofu Dental; San Marcos, CA)
- FlexiDisc finishing discs and Enamelize polishing paste (Cosmedent)
- Allegro cure light (Den-Mat; Santa Maria, CA)
- Microbrush plus (Microbrush; Grafton, WI)
- #12 Bard-Parker blade (Becton Dickinson; Franklin Lakes, NJ)
- AccuFilm articulating paper (Parkell; Edgewood, NY)
- Artex semi-adjustable articulator and facebow (Jensen Industries; North Haven, CT)
- Jeltrate alginate (Dentsply Caulk; Milford, DE)
- yellow stone and plaster (Kerr, Orange, CA)

## TREATMENT

### PREPARATION

A clear matrix was taken of the mock-up model, which was cross-mounted after the occlusion and esthetics were fine-tuned. This matrix was then trimmed to the incisal edges and used as a guide for the resin placement. Another clear stent of the model was made, and holes were drilled through the facial surface to act as a preparation guide for the veneers.<sup>2</sup> The patient was anesthetized with lidocaine with 1:100,000 epinephrine. Gingival contouring was done using a soft tissue laser for all the upper anteriors (Fig 5). A periodontal probe was used to sound to bone to avoid invading the biological width. A 30% hydrogen peroxide solution was used to clean the tis-

sue and then carefully rinsed off. To isolate the gingival area, a retraction cord saturated with a clear hemostatic agent was placed.

All six anterior teeth, ##6-11, were treated at one time. A minimum preparation was done using a chamfer diamond (Fig 6). One of the clear stents was then used to measure for adequate reductions. The preparation was then cleaned with a hydrogen peroxide solution and rinsed. A clear matrix strip was placed in between each of the teeth for isolation. The teeth were then etched with 37% phosphoric acid, rinsed, and dried. A layer of bonding agent was placed, blown thin, and cured for five seconds. A layer of hybrid composite was placed on the six anterior teeth with a clear stent and cured for 40 seconds per tooth (Fig 7). A thin coat of honey yellow tint was placed on the gingival area<sup>3</sup>; this was cured for 40 seconds.

### LAYERING

Next, a layer of microfill composite was placed, and internal sculpting was achieved with a multi-use composite placement instrument (Fig 8). This was used to create internal mammelons and was cured



*Figure 8: Sculpting was done to create internal mammelons.*



*Figure 9: Before and after; anatomy and texture can be seen from a lateral view.*



*Figure 10: Before and after; retracted view 1:1.*



*Figure 11: A lovely smile that is in harmony with the patient's face.*

for 40 seconds.<sup>4</sup> Finally, a medium incisal composite was placed to full contour. Different shades were used for each of the teeth. The centrals and laterals were layered with a hybrid layer of B1, microfill SB3 (Superbrite shade) and medium incisal. The canines were layered with B1 hybrid and microfill. The bicuspids were layered with B1 hybrid and SB3 microfill. The entire surface of each tooth was coated with water-soluble glycerin to eliminate the oxygen-inhibited layer and cured.

#### CONTOURING

Contouring was done with a #9 fluted carbide bur and discs for the facial, while the lingual was done with a football-finishing diamond. Anatomy and texture were created using a #9 fluted bur and points (Fig 9). The interproximal was contoured with a #12 blade and a diamond disc. The occlusion was checked and final polish was achieved with discs

and composite polishing pastes (Fig 10). The front six anteriors, along with gingival contours, were done on the first day. The patient returned the next day for treatment of the remaining four bicuspids. Whitening of the lower arch was achieved with a 20% carbamide peroxide take-home kit. Postoperative photos were taken.

#### SUMMARY

The patient's smile is now in total harmony with her beauty, and she is extremely happy with her new appearance (Fig 11).

By having the ability to deliver direct resin veneers with a high level of excellence, the dentist is able to deliver an outstanding cosmetic result and also to have better insight into all the elements of smile design.<sup>5</sup>

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