No-Prep Veneers. Enhancing the Natural Tooth

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As we all know, preparation design can make or break a case. With proper planning and prep design we can create stunning esthetics with depth and vitality. Without proper planning and prep design the best we can do is usually an over-contoured, manufactured looking restoration. The same can be said about no-prep dentistry although we are looking to nature to provide our prep design instead of the dentist. Nature produces a variety of tooth shapes and arrangement within the display of the lips and the face of the patient. In many cases a patient's smile requires a greater tooth presence due to small teeth, large lips or tooth position. The author believes that it is the responsibility of dental professionals to recognize and diagnose these patients searching for cosmetic enhancement in the most non-invasive way. Case selection is critical and can determine success or failure in any case, however this is most critical on no prep cases. The author feels there should be no compromise of esthetics in treating patients without any tooth preparation as long as both the dentist and ceramist work together as a team. In this article we will look at how the author fabricates no-prep veneers for the most esthetic outcome, the thought process behind selecting porcelains and what to look for in diagnosing a no-prep case.

CASE PRESENTATION ONE

Patient is 15 years old and has a growing career in the entertainment industry, she is moving to Hollywood to pursue her career and feels that her smile could use some improvement. She wants the spaces closed and a brighter, fuller smile (Figs. 1A & 1B), The patient already has a good amount of tooth display in repose so we do not want to lengthen her

CASE 1

FIGURE 1A

FIGURE 1B

FIGURE 2

CASE 1


FIGURE 3


FIGURE 4


FIGURE 5


FIGURE 6


FIGURE 7


FIGURE 8


FIGURE 9


FIGURE 10


FIGURE 11


FIGURE 12


FIGURE 13


FIGURE 14

teeth (Fig. 2). Because of the patients age the doctor did not want to prepare her teeth and therefore requested that we proceed with no prep veneers.

FABRICATION

The first step in any smile design case is to create prototypes. Prototypes serve several purposes. First, they allow the patient and the dentist to preview their new smile both esthetically and functionally. Second, they show us if and where any enamel reduction is needed. Third, they are used for shade communication between the patient, the dentist and the ceramist. Prototypes can be created with bis-acryl temp material by using a diagnostic wax up and a silicone matrix as was done in this case (Figs. 3-6) or by hand sculpting directly in the patient's mouth with composite, each of these techniques has benefits and drawbacks. Once the patient and the dentist have approved the design an impression is taken and sent to the lab along with a photographic series for communication. Models are created and platinum foil is adapted to the dies by means of tweezers, an orange wood stick and a swager (Figs. 7-9). The lab then fab-

CASE 1


FIGURE 15


FIGURE 16


FIGURE 17


FIGURE 18


FIGURE 19


FIGURE 20


FIGURE 21


FIGURE 22


FIGURE 23


FIGURE 24


FIGURE 25


FIGURE 26

ricates a silicone matrix from the model of the prototypes to show the amount of space needed for ceramic (Figs. 10-13). By using these tools, the ceramist is able to see how much room he has from the tooth to the final desired contour; this information is critical in determining which porcelains to use and how much opacity or translucency is needed on each individual tooth.

First a wash bake is applied to the foil and the foil is re-adapted to the die to insure a good fit. Translucent porcelains are used in the gingival, incisal, and interproximal zones in order to blend into the natural tooth (Fig. 14). Subsequent porcelain is applied and fired to achieve the desired effects and contour (Fig. 15). Colored pencils and metallic paste are utilized to verify and establish line angles and surface anatomy (Figs. 16 & 17). Surface texture and final contours are reached using various rotary diamond instruments. Once the desired contour and surface morphology is achieved the veneers are brought to a natural glaze and manually polished using a series of rubber wheels and diamond polishing paste. Finally the foil is removed from the veneers

CASE 1

FIGURE 27

FIGURE 28

FIGURE 29

FIGURE 30

FIGURE 31

FIGURE 32

with sharp pointed tweezers, because the veneers are very thin, .02 mm, the ceramist must be extremely careful while removing the foil (Fig. 18). After the foil is removed any marginal adjustments are made with a rubber wheel. Here you can see the amount of translucency and subtle opacity built into the veneers (Fig. 19). Once the veneers are placed back on the model we can see how much the veneers will be influenced by the underlying tooth color (Figs. 20-24).

Finally the veneers are placed using translucent cement. These photos were taken immediately after bonding (Figs. 25-27).

Porcelain selection is critical for no prep cases, if the proper porcelains are not chosen the veneers can be very opaque and flat looking or to low in value. Note the effect of too much translucency and to much opacity. In this study, over 50 veneers were made on tooth #9 to evaluate the effects of value and shade on a natural tooth. We learned that if too much opacity is added the margins will be visible and there is little light transmission from the tooth. On the other hand, if there is to much translucency the entire tooth becomes visible and the value is lowered, therefore semi colored translucent porcelain must be added in marginal and interproximal areas and more opaceous porcelain should be blended to mask out undesirable colors and brighten the tooth. If any length is added it must be blended so as not to have an immediate shift in color or value from the tooth to the unsupported porcelain in the veneer. We also learned that the original color of the tooth can be drastically changed and brightened and dark colored teeth can be blocked out if the patient desires (Figs. 30-32). Many times when a patient presents with severly discolored teeth the ceramist can fabricate a prepless veneer on a single anterior tooth so the dentist and the patient can verify that the final shade can be achieved without any significant cost, this creates a very comfortable situation from which to proceed (Figs. 28-29).

CASE PRESENTATION 2

Patient is a teenager that is unhappy with her smile and feels like her teeth are too small, she would like a more grown up smile. In our evaluation, both the technician and the dentist felt that her centrals were an appropriate size for her smile but that her laterals and cuspids were lacking. A diagnostic wax up was done to confirm our suspicions and the patient approved it. The technician fabricated no prep veneers on teeth numbers 6 and 7, 10 and 11. Special consideration was given to the contours and characterization of the veneers in order to blend with her natural teeth and create harmony in the smile (Figs. 33-38).

CASE PRESENTATION 3

This patient wanted a brighter smile but also a smile that was more full and closed some of the spaces (Fig. 39). The dentist began this process with an intra-oral mockup. By hand sculpting the prototypes the dentist is able to get real time feedback from the patient about the overall archi-

CASE 2


FIGURE 33


FIGURE 34


FIGURE 35


FIGURE 36


FIGURE 37


FIGURE 38

tecture and color. This information is critical, as it will become the most important tool of communication between the dentist and the ceramist (Fig. 40).

After the prototypes have been approved the dentist will take and impression and send it to the ceramist. The ceramist creates two silicone matrixes (Figs. 41, 42), which will serve as a guide for how much room there is for porcelain application (Figs. 43, 44). Without this information it is very difficult for the ceramist to plan which porcelains he will need to use to create the final restoration with proper translucency and color. The ceramist then fabricates the veneers with internal characterization to enhance the natural tooth (Figs. 45-48). Finally, the veneers are placed and the patient is extremely happy (Figs. 49-50).

In summary, there is a lot of misleading information in the dental profession about what can

CASE 3


FIGURE 39


FIGURE 40


FIGURE 41

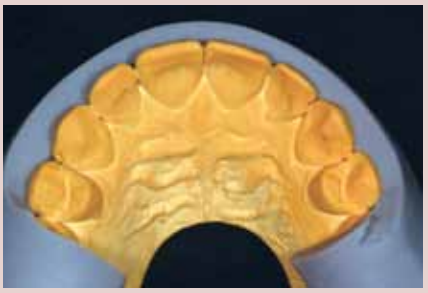
FIGURE 42

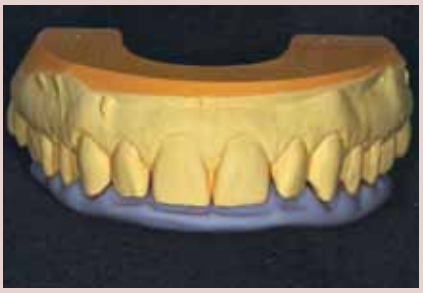
FIGURE 43


FIGURE 44

CASE 3

FIGURE 45

FIGURE 46

FIGURE 47

FIGURE 48

FIGURE 49

FIGURE 50

or cannot be accomplished with no prep veneers. After fabricating more than 10,000 no prep veneers, the author feels that no prep veneer are an important tool to incorporate into your practice. When diagnosed correctly and fabricated properly no prep veneers can be the most aesthetic cosmetic enhancement option for patients today. OH

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Oral Health welcomes this original article.