

Long-Term Composite Provisionalization: The Conversion

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Figure 1. Preoperative photo of the dentition.



Figure 2. The maxillary OverTemps (Smile-Vision) placed previously.



Figure 3. Anterior view of the OverTemps.



Figure 4. Occlusal view of the OverTemps.



Figure 5. Photo showing one-half of the maxillary anterior OverTemps removed.



Figure 6. Teeth Nos. 5 to 12 were prepared.

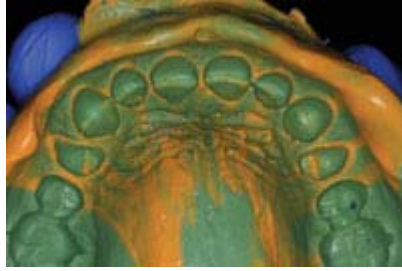


Figure 7. A PVS impression (Aquasil Ultra [DENTSPLY Caulk]) was taken.



Figure 8. Bite registration was taken (Jet Blue Bite Fast Set [Coltène Whaledent]) using an anterior bite jig.



Figure 9. New provisional (Protemp 3 Garant [3M ESPE]) derived from Hard/Soft template (Smile-Vision).



Figure 10. Pressed porcelain veneers (Authentic [Jensen Industries]) on the model, as returned from the dental laboratory.

For our patient Phil, the dental work that had been performed 2 months earlier involved the use of 6 bonded segments of OverTemps (Smile-Vision) fabricated from a newer material (Radica Provisional and Diagnostic System [DENTSPLY Prosthetics]). This material can best be described as a super-hard light-cured composite resin designed specifically for long-term temporization. While a complete description of its material properties is beyond the scope of this article, the manufacturer describes its hardness as falling somewhere between their indirect composite (Cristobal+ [DENTSPLY Ceramco]) and an IPN Bioform (DENTSPLY Trubyte) denture-tooth acrylic. The OverTemps consisted of 2 anterior segments covering teeth Nos. 6 to 11 and teeth Nos. 22 to 27. Also included in the case were 4 posterior segments that covered the occlusal surfaces of the posterior quadrants chosen for restoration (Figures 1 to 4). These segments were the progeny of a master diagnostic wax-up generated at the Smile-Vision dental laboratory from impressions and occlusal records, as well as a portrait-based photographic simulation of the new dentition generated by their Cosmetic Imaging Department. The wax-up was ultimately converted at the laboratory to a Resin Replica (Smile-Vision) mock-up, and also served as the basis for template fabrication used to generate traditional bisacryl provisionals when the OverTemps arch segments were ready to go to ceramic conversion.

The purpose of this approach, as discussed in the December 2007 article, was to evaluate Phil's new occlusal scheme and aesthetics for an extended period of time with what was in essence a "fixed appliance." The technique utilizing OverTemps allowed our evaluation goal to be accomplished without the need for tooth preparation since the segments were bonded to etched enamel, and to alloy/

gold via traditional acid etching and micro-abrasion (as applicable to metallic surfaces). It was further explained that this approach made sense for the restoration of moderate to advanced worn dentitions—so long as the arch alignment is symmetric and does not require an "instant" or traditional orthodontic fix. Finally, it was pointed out that the OverTemps technique offered a staged approach to full-arch rehabilitations. This is because the placement process and longevity of the material allows the practitioner to convert the restoration to its final form in segments, at whatever pace seemed appropriate. Staging the treatment can sometimes help overcome financial barriers to care for the patient who might otherwise want to proceed with a large restorative case. However, such staging might depend upon the operator's or patient's tolerance for procedural length.

The remainder of this article will describe how Phil's case was ultimately converted to full arch restorations consisting of a combination of porcelain veneers in the anterior and porcelain to zirconium crowns in the posterior. In Phil's rehab, the lower pre-existing first and second molar crowns were left undisturbed owing to their good condition and harmony within the newly created occlusal scheme. All laboratory work was generated by Smile-Vision.

THE CONVERSION

Following a 2-month evaluation period and a consequent "thumbs up," we began Phil's conversion from provisional to final restorations. During the time he was wearing his Over-Temps, he was seen several times in order to evaluate his level of comfort. This was done because we were increasing his vertical dimension of occlusion (OVD) 3 to 4 mm, and his original edge-to-edge incisal relationship was being converted to a class I relationship. It is worth noting that since the entire occlusal scheme had been established, stabilized, and evaluated in a composite resin material like Radica, it really did not matter which segment we replaced first. I have likened this approach to performing a full-mouth rehab on "training wheels." The similarity arises when one realizes that at no point is balance lost during the restoration. There is always a segment or two to retain your established OVD/occlusal

relationship, whether it is a segment previously temporized with Radica or a “converted-to-porcelain” segment. In this case, we chose to begin with the maxillary arch from teeth Nos. 5 to 12. Once the front 8 veneers were in place, this segment would be followed by the maxillary molars and bicusps bilaterally. Two separate impressions were taken to carry out this conversion—one of the prepared anterior 8 teeth and one of the maxillary posteriors following delivery of the veneers on teeth Nos. 5 to 12 at a previous insertion visit.

Work on the Maxillary Arch Begins



Figure 11. A bonding agent (*Brush & Bond [Parkell]*) was applied prior to luting the veneers with a light-cured resin cement (*Insure Lite Clear [Cosmedent]*).



Figure 12. Maxillary anterior 8 units in place, opposing the mandibular anterior *OverTemps*.



Figure 13. Mandibular anterior teeth preparation was begun and *OverTemps* removed. (Note the intimate adaptation to the underlying tooth structure).



Figure 14. The fully-prepared mandibular anterior teeth.



Figure 15. Spot etching the mandibular anteriors prior to applying an unfilled resin.



Figure 16. Hard/Soft template (*Smile-Vision*) being used to “press on” lower provisional.



Figure 17. New mandibular anterior bisacryl provisional in place.



Figure 18. Maxillary occlusal view of completed case.



Figure 19. Mandibular occlusal view of the completed case.

Figure 20. Retracted view of the completed restorative case.

First, the bonded OverTemps made of Radica were removed from teeth Nos. 5 to 12 (Figure 5). It had been bonded (Brush & Bond [Parkell]) and seated with dual-cured resin cement (Calibra [DENTSPLY Caulk]). Light tooth preparation followed as the rest of the provisional was removed from this anterior segment. Note how the posterior occlusal surfaces of Radica remain in place (Figure 5). In Figure 6, you will observe that all the Radica has been removed and the dentition prepared in the same fashion as for traditional porcelain veneers. If you compare Figure 6 to Figure 5, you will note that the overall tooth form is preserved. A gentle finish line is provided for accurate veneer fabrication. If you are wondering how Radica cuts, imagine prepping core build-up material. It cuts smoothly, but with a modicum of resistance to your diamond. Most importantly, it is easily and quickly removed.

A full maxillary arch impression was taken using a PVS material (Aquasil Heavy Body and XLV Light Body [DENTSPLY Caulk]) (Figure 7). Before taking the impression, a wetting agent (B4 Pre-Impression Surface Optimizer [DENTSPLY Caulk]) was painted on the tooth surfaces to reduce surface tension in order to obtain a more detailed record. Typically, such impressions are taken using a rigid laboratory-fabricated custom tray (eg, Triad System [DENTSPLY Trubyte]). A bite registration was taken using an anterior bite jig and a PVS material (Jet Blue Bite Fast Set [Coltène Whaledent]) (Figure 8). This technique is ideal for taking accurate and rapid occlusal records. In Figure 9, you will observe the bisacryl provisional (Protemp 3 Garant [3M ESPE]) fabricated with Smile-Vision's hard/soft templates. This provisional was bonded in place using a spot-etch technique. I have found it helpful to coat spot-etched preparations with an unfilled resin, Den-Mat's VisarSeal that is air-thinned and cured before pressing the bisacryl-filled template over them. You might agree that the provisional bore a striking resemblance to the tooth forms as seen previously in the OverTemps. This is not a coincidence because both the OverTemps and the templates that were used to fabricate the bisacryl provisional were a "descendent" from the same preliminary mock-up (Resin Replica [Smile-Vision]).

Figure 10 demonstrates the completed set of veneers, again bearing a remarkable similarity to the provisionals and OverTemps which preceded them. Once we were ready to deliver the restorations, the prepared teeth were coated with a bonding agent (Brush & Bond [Parkell], Figure 11) and then luted into place with a light-cured resin cement (Nex-us 3, [Kerr]). The porcelain veneers were fabricated by the dental laboratory technicians using a pressed ceramic system for optimal aesthetics (Authentic [Jensen Industries], Figure 12). Notice how the finished restorations fit in nicely with the remaining Radica OverTemps. Shade and anatomic form consistency is apparent.

Work on the Mandibular Arch Begins

Jumping ahead and beyond the restoration of the upper posterior dentition, which was carried out in similar fashion to the maxillary anteriors, we observe the removal of the Radica OverTemps on the lower anterior 6 teeth (Figure 13). The posterior restoration of the maxilla was simplified by perfect stability resulting from the OVD relationships that were maintained between the 8 maxillary anterior porcelain restorations and the mandibular OverTemps. Again, the concept of "training wheels" implies not losing one's balance.

Figures 14 to 17 track the preparation of teeth Nos. 22 to 27 and demonstrate the above mentioned "spot etch" technique with subsequent "press-on" bonded temporaries using Hard/Soft (Smile-Vision) templates. Again, the resemblance between the previously placed Over-Temps and the new bisacryl provisional can be observed by comparing Figure 17, teeth Nos. 22 to 27, with the same teeth in Figure 6. The final piece to the puzzle was the completion of the mandibular posteriors (in this case the bicuspid). As can be seen in Figures 18 to 20, the case has been completed. (Compare Figure 20 to Figure 3 and note the morphologic similarities).

DISCUSSION

As was noted in the previous article cited above, when using such an approach it is important to have a clear understanding with your patient that the OverTemps are "temporaries" and that they must be replaced within a reasonable time span. While the manufacturer calls for a 6-month life span, it was this operator's opinion that the material could go considerably longer if called upon to do so. Even though the individual teeth were splinted, careful patient maintenance can keep tissue healthy. This is facilitated by carefully opening embrasures so that the soft tissues are not en-croached upon. In my experience, high-powered loupes (EyeMax [Orasoptic]) are in-valuable when seeking to carefully contour provisionals that are in close proximity to the soft tissue.

To be sure, considerably more time and lab expense are incurred when using this treatment approach and this must be factored into the final fee quoted to your patient. The flip-side of this drawback is that you may find yourself taking on larger cases that once might have appeared too complex to tackle.

CONCLUSION

A method suitable for the restoration of moderate to advanced worn dentition cases which display reasonable arch alignment has been demonstrated.

This treatment concept and the suggested techniques as presented allow both the dentist and patient to have a trial run of both aesthetics and occlusion. Placement of OverTemps can be done in a single session with little to no tooth preparation and no anesthesia. In addition, this technique using a pre-planned approach to care allows for staged treatment, thus tailoring clinical session length to suit the patient and doctor. It also provides the ability to be more flexible in working out financial arrangements for a large restorative case. Finally, the ability to take on a large case in stages may increase operator acceptance and comfort in doing restorative work that may have been previously avoided.

ADDITIONAL RESOURCES

The December 2007 article in Dentistry Today referred to above can be found at dentistrytoday.com. A short video demonstrating the clinical placement of OverTemps on this case is available at either drgoldsteinspeaks.com or at the Web site smilevision.net.

Dr. Goldstein, a member of the International Academy of Dento-Facial Esthetics, practices general dentistry in Wolcott, CT. Recognized as one of Dentistry Today's Top Clinicians in CE for the last 5 years, he lectures and writes extensively concerning cosmetics and the integration of digital photography into the general practice. A regular contributing editor for Dentistry Today, he has also authored numerous articles for multiple dental periodicals both in the United States and abroad. He can be contacted by e-mail at martyg924@cox.net. His current speaking schedule is available at drgoldsteinspeaks.com.

Disclosure: Dr. Goldstein is a consultant to Smile-Vision, Inc., DENTSPLY Caulk, and Coltène Whaledent.

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