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How to Make Durable and Aesthetic Temporaries

In Search of the Perfect Temp

During my 35+ years in practice, I have tried virtually every temporization product on the market in hopes of finding the "perfect" provisional material. When evaluating temporary materials I look for the following:

- Strength and Aesthetics
- Minimal Shrinkage
- Short Set Up Time
- Light Cure Option

Several years ago I discovered a material with all of these properties and more: Tuff-Temp Plus (Pulpdent). The material's advanced rubberized-urethane chemistry provides greater strength, toughness, fracture resistance, dimensional stability, and a tighter fitting provisional restoration than acrylics and bis-acrylics, eliminating the need for relining. Tuff-Temp Plus also has an Add-on material and Glaze. I regularly use the Add-on material to fill air bubbles or thicken lateral walls. The light cure glaze can be mixed with tints to adjust the shade and provides a shiny finish. Excess cement is easily removed from the glazed surface.

Now I use Tuff-Temp Plus for all of my single and multi-unit temporaries. The following cases show the efficiency and versatility of this unique provisional material.

About the Author

Dr. Raymond D. Kimsey graduated from the University of Florida School of Dentistry and then completed a General Practice Residency at Miami Children's Hospital. His practice specializes in treating complex and challenging cases and also offers IV sedation. Dr. Kimsey is adept at working with "dental phobics" and was named Miami's Best Dentist by New Times magazine. Dr. Kimsey is an advisor to S-Ray and is the board chair of Miami Arts Charter School.

Single Unit Provisional

Most of the temporaries I make are for single unit crowns. In the following case, I fabricated a temporary crown for a first molar (#19) with a failed amalgam restoration and eroded cervical area (Figure 1) for a healthy, active, 50-year-old male patient. I used the Tuff-Temp Plus Add-on material to block out the eroded cervical area (Figure 2) so that I could take a PVS impression of the tooth and surrounding teeth (Figure 3). Figure 4 shows the temporary two weeks after placement. The temp did not need to be relined thanks to the low shrinkage rate of Tuff-Temp Plus.

Figure 1. Shows lower left first molar (#19) with failed amalgam restoration and eroded cervical area

Figure 2. Tuff-Temp Plus Add-on material is used to block out the eroded cervical area on tooth #19

Figure 3. PVS impression of tooth #19 and adjacent teeth

Figure 4. Shows temporary two-weeks after placement

Injection Molding a Temporary Cantilever Bridge

An 81-year-old male patient presented with a second premolar (#29) with external resorption (Figure 5). In the pre-operative radiograph the resorption appears as a black spot on the root of #29 (Figure 6). The prognosis was poor because of external resorption present on the root. The long-term success rate of treatment, even with root canal therapy, was not good when compared to extraction and placement

Figure 5. Shows second premolar (tooth #29) with external resorption

of an implant. The patient was also taking antibiotics to treat mycoplasma pneumonia, so I suggested extraction to reduce the risk of infection. A traditional bridge was not an option since the patient already had implants for teeth #30 and #31 and wanted the final restorations to be independent.

The patient's previous implants had healed nicely and he opted for another implant to replace tooth #29. He would require bone grafting before an implant could be placed, and would need a temporary for several months while the graft matured.

Before extracting the tooth I took an impression with a clear bite material to use as a template for the provisional. I planned to create a temporary cantilever bridge using an injection molding technique and a fiber post.

Following the extraction, tooth #28 was prepared (Figure 7), etched and a bonding agent was applied. Next a thin protective layer of stackable composite (ACTIVA Presto, Pulpdent) was placed in the prepared area (Figure 8).

I wanted the fiber post to be removable so I covered it in Teflon tape before placing it horizontally across the occlusal surface of tooth #28. Next I applied more ACTIVA Presto around the fiber post and light cured the post into place (Figure 9). Once cured, I extracted the post, removed the Teflon tape, and re-inserted the post, which fit snuggly in the space left inside the layer of ACTIVA Presto (Figure 10).

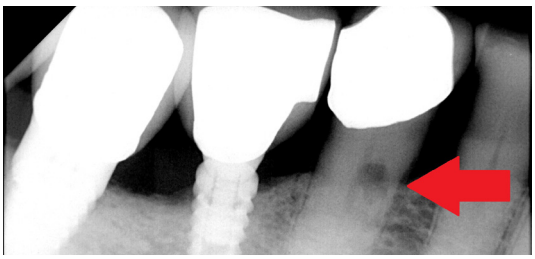

Figure 6. In the pre-operative radiograph the resorption on #29 appears as a black spot

Figure 7. Tooth #29 is extracted and the adjacent tooth #28 is prepared to support the temporary restoration

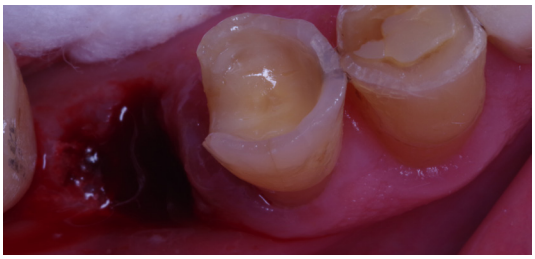

Figure 8. After etching and applying a bonding agent to tooth #28, a thin layer of ACTIVA Presto is placed in the preparation

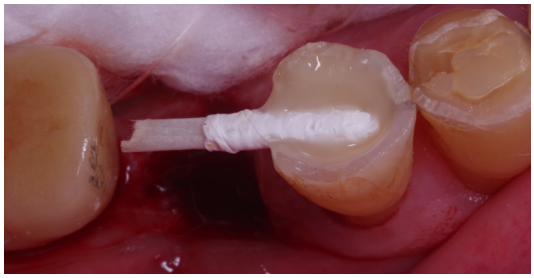

Figure 9. ACTIVA Presto is applied around a fiber post covered in Teflon tape that is placed horizontally across the occlusal surface of tooth #28, and light cured

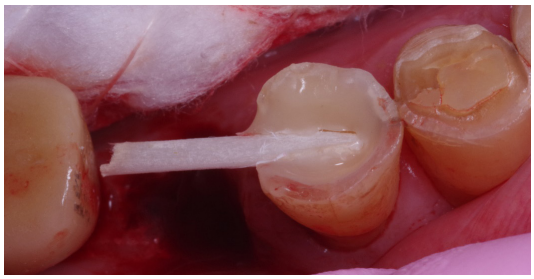

Figure 10. After removing the Teflon tape the fiber post is reinserted into the space left inside the layer of ACTIVA Presto, ensuring a good fit

Then it was time to create the temporary using the impression as a template. After removing the impression from the tray, I made a small hole over the occlusal surface of tooth #29 to allow for injection molding (Figure 11). With the fiber post in place in the adjacent tooth, I placed the impression over the treatment area and injected Tuff-Temp Plus A3.5 shade through the hole to create the temporary and incorporate the post (Figure 12).

Although I used the darkest available shade of Tuff-Temp Plus (A3.5), the temporary was lighter than the patient's adjacent teeth. If aesthetics had been a concern, I would have mixed in a porcelain stain or added a thin layer of composite that matched the surrounding dentition.

Next I light cured the occlusal aspect of the temporary restoration to secure the fiber post in tooth #29, taking care to avoid curing the apical aspect so that the pontic would not be locked in place. Now the post was securely incorporated inside the Tuff-Temp Plus restoration and the temporary bridge was removed (Figure 13).

Using the Tuff-Temp Plus Add-on material, which has a flowable consistency, I built up the apical aspect of the restoration to make an ovate pontic. The temporary was finished with Tuff-Temp Glaze - a viscous and glossy material that eliminates the need for polishing (Figure 14).

The temporary bridge was seated and ACTIVA Presto was placed over the fiber post and then light cured. I marked the occlusal surface of the temporary with Accufilm (Parkell) and adjusted the occlusion using a football-shaped diamond. Figure 15 shows the completed temporary. The restoration has been in place for 3 months with no reported issues.

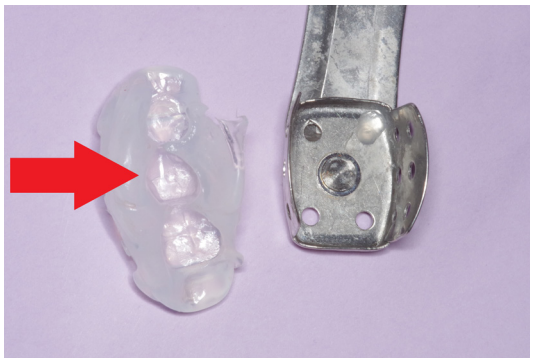

Figure 11. The impression is removed from the tray and a small hole is created over the occlusal surface of tooth #29

Figure 12. With the impression serving as a template, Tuff-Temp Plus is injected through the hole to create the temporary and incorporate the fiber post

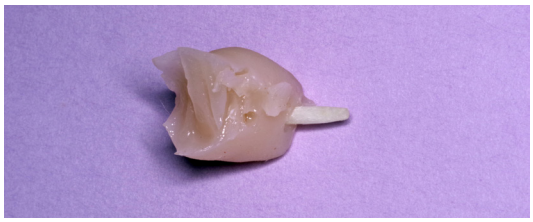

Figure 13: Shows cured Tuff-Temp Plus restoration with fiber post inside

Figure 14. The Tuff-Temp Plus Add-On material is applied to the apical aspect to create an ovate pontic and finished with Tuff-Temp Plus Glaze

Figure 15. Shows completed temporary cantilever bridge

Long-term Multi-unit Provisional

Sometimes circumstances force patients to stay in provisionals for extended periods of time. Shortly before the COVID-19 shutdown in my home state of Florida, a 65-year-old male patient asked to have his existing crowns on teeth #5-#12 replaced with longer, whiter crowns. Figure 16 shows a retracted view of the gingival tissues and emergence profiles of the provisional restorations.

The patient was caries prone with a penchant for sugary drinks, and was missing teeth #2, 3, 4, 13 14 and 15. These teeth would be restored with implants in the #4 and #13 positions, but first the patient wanted new, more esthetic crowns for teeth #5-#12. In the meantime, he needed a material that could withstand occlusal forces without chipping or breaking.

After sedating the patient with nitrous oxide, I cut off his existing zirconia crowns, revealing secondary caries. The decay was removed and the teeth were prepared for the temporary restoration (Figure 17).

Since the patient's teeth were divergent, I fabricated the provisional in two pieces, using Tuff-Temp Plus bleach shade, a pressure formed matrix (Ministar, Great Lakes Technologies), and Teflon tape. I created the first piece by placing Tuff-Temp Plus into the section of the matrix for teeth #5-#9 (Figure 18). Once complete, I placed Teflon tape over the first piece and injected Tuff-Temp Plus into the remaining portion of the matrix to create the second provisional for teeth #10-12.

Figure 16. Pre-operative image with retractor

Figure 17. After removing secondary decay, the teeth were prepared for the temporary restoration

Figure 18. Temporary restoration for teeth #5-#9 made with Tuff-Temp Plus Bleach shade

Tuff-Temp Plus grinds and powders to feather margins without softening or gumming up burs. After trimming and glazing the temporary restorations with Tuff-Temp Glaze the temporaries were cemented in place with GC Temp Advantage (GC America) and excess cement was easily removed from the glazed surface (Figure 19).

Under normal circumstances this patient would have returned in about two weeks to remove the temporaries and receive the final restorations. Due to the COVID-19 shutdown, however, these provisionals remained in service for over two months without any additional treatment. There had been no need to reline them, the margins were excellent, and the tissues remained healthy. The Tuff-Temp Plus restorations never came loose, maintained nice aesthetics, and thanks to the rubberized-resin chemistry they did not chip or fracture. Figures 20 and 21 show the temporary restorations more than two months after initial placement.

Figure 19. Temporaries are cemented and cleaned

Figure 20. Temporary restoration with Tuff-Temp Plus more than two months after initial placement

Figure 21. Shows temporary restorations nine weeks after placement