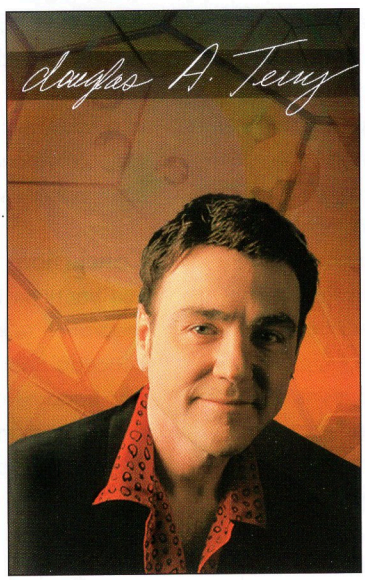
The Interim Restoration

Douglas A. Terry, DDS*

In the past, the provisional restoration was often regarded as little more than a space holder, providing function for the patient until the permanent restoration was received from the laboratory. The old adage, "Do not make the temporary too nice or the patient will not come back," relied on this philosophy. Since prosthetic failures not only arise from technical challenges but from differences in expectations and perceptions of the restoration among the various stakeholders,[1] modern restorative concepts abandon this original philosophy and utilize the interim restoration to provide the patient, clinician, and technician with various information while reaffirming the final goals of treatment.

Thus, the interim restoration becomes an essential component of the treatment phase for patients who require periodontal therapy and prosthetic dentistry. It should protect prepared teeth and the pulp from thermal and chemical changes and exposed dentin from bacterial invasion while reducing dentinal sensitivity. The provisional restoration should also support and stabilize compromised teeth and preserve the position, form, and color of the gingiva and maintain the periodontal health while the definitive restoration is being fabricated. Additional requirements of the provisional restoration include but are not limited to:



- Serves as a diagnostic tool to determine the appropriate vertical dimension of occlusion, occlusal and incisal planes, incisal length, lip and tooth position, and facial dimension;
- Maintains tooth position and prevents micromovement and occlusal changes;
- Develops and establishes function, aesthetics, and phonetics;
- Provides physiological and psychological comfort to the patient while eliciting his or her acceptance of the shape, texture, and color; and
- Tests the osseointegration of the implant and allows one to develop gingival contours before final rehabilitation.[2]

Assessing these objectives prior to developing the definitive restoration enables the clinician to detect and eliminate potential challenges as well as to evaluate its potential for success. In addition, an evaluation of oral hygiene techniques throughout provisionalization can provide valuable information for modifying the anatomical design of the final restoration for optimal oral health.

Unfortunately, many clinicians are still utilizing yesterday's concept of the temporary restoration with today's newer provisional materials and wonder why they have less than ideal final results. This approach may compromise the placement of high-quality final restorations because the time between tooth preparation and the placement of the definitive restoration is insufficient for achieving optimal success. In addition, limited operatory time for provisionalization can result in poorly adapted restorations with open, irregular, and overcontoured and/or undercontoured margins that can cause plaque accumulation and subsequent periodontal sequelae that can range from gingival inflammation to gingival recession.[3] Therefore, a proper allocation of time and a knowledge of the fundamental morphologic and physiologic requirements for developing an interim restoration are required.

There are several contributing factors to a well-integrated interim and definitive restoration:

- Material stability, strength, and durability (wear resistance);
- Nonporous, nonirritating, and color stability;
- Smooth and highly polished, plaque-resistant surfaces;
- Optimal marginal adaptation to the tooth preparation;

Figure 1. Provisional restoration shows optimal marginal adaptation to tooth preparation, ideal physiologic contours, and embrasures, as well as harmonious integration of the soft tissue and tooth complex.

Figure 2. The definitive ceramic restoration on the mandibular right first molar is designed from the acrylic resin prototype.

- Ideal physiologic contours and embrasures;
- Optimal retention during function;
- Ideal occlusal and proximal contacts;
- Favorable aesthetics;
- Comfort during function;
- Cleansable by oral hygiene procedures;
- Easy removal and recementation; and
- Optimal gingival adaptation.[4]

Growing aesthetic demands by the public and the profession have yielded provisional materials with improved physical and aesthetic properties. To meet patient expectations, numerous direct and indirect provisionalization procedures are available and have been described such as the direct alginate overimpression technique, indirect matrix technique, block technique, and the laboratory heat-processed technique.[2] Generally, these procedures utilize self-curing acrylic resins during fabrication and may not provide optimal aesthetics, since they do not permit characterization of the provisional restoration because of the difficulty of layering various acrylic resin shades.

The author utilizes a custom acrylic matrix technique with a self-curing acrylic resin for the fabrication of direct and indirect restorations (Figures 1 and 2). A custom acrylic matrix is utilized with a polyether impression material to replicate the preoperative intraoral tooth structure, the diagnostic waxup, or the duplicate stone model. The custom matrix is used as a vehicle for the transfer of the acrylic resin to the prepared tooth structure or the prepared stone model. For the fabrication of multiple restorations, the indirect technique may provide a more efficient use of time and reduce the heat generated by the exothermic polymerization reaction of the self-polymerizing resins.[5] The direct intraoral technique can be modified through a "cut-back" process and the application of tints and modifiers with a translucent layer of composite resin. This technique can improve color stability, wear resistance, longevity, contour, shape, surface finish, and aesthetics. The indirect technique can be developed with a dentin-shaded, self-curing acrylic and modified through a cut-back technique and a similar application of tints and modifiers, and the application of an overimpression of a translucent acrylic enamel layer. These indirect acrylic resin provisionals can be heat processed for improved color stability, wear resistance, aesthetics, and longevity.

Conclusion

The transition in terminology from temporary to interim restoration reflects the changes in restorative treatment concepts from past to present. The interim restoration has become an integral component in the development and management of the design of the definitive prosthetic restoration.

References

1. Albino JE, Tedesco LA, Conny DJ. Patient perceptions of dental-facial esthetics: Shared concerns in orthodontics and prosthodontics. J Prosthet Dent 1984;52(1)9-13.
2. Cho GC, Chee WL. Custom characterization of the provisional restoration. J Prosthet Dent 1993;69(5):529-532.
3. Donaldson D. Gingival recession associated with temporary crowns. J Periodontol 1974;44(11):691-696.
4. Liebenberg WH. Multiple porcelain veneers: A temporization innovation—the peripheral seal technique. J Can Dent Assoc 1996;62(1):70-78.
5. Castelnuovo J, Tjan AH. Temperature rise in pulpal chamber during fabrication of provisional resinous crowns. J Prosthet Dent 1997;78(5):441-446.

***Assistant Professor, Department of Restorative Dentistry and Biomaterials, University of Texas Health Science Center Dental Branch, Houston TX; Faculty Member, University of California Center for Esthetic Dentistry, Los Angeles, CA; private practice, Houston, TX.**