

Predictable Tips in the World of Bonding Deliver Success

Among the whirlwind of dental materials on the market today, bonding agents remain one of the basics in restorative dentistry. With more than 80 different bonding agents available, various protocols abound for these products. The strength and longevity of a restoration can be determined by how well the bonding agent is transferred to the tooth. Sensitivity is one of the most obvious indications of an insufficient bond. From this perspective, we will discuss some of the fundamen-

tals of bonding, focusing primarily on the fourth, fifth, and sixth generations of bonding agents, along with their protocols.

As the demand for high-quality restorations increases, so does the dental professional's need for exceptional materials. Advances in every area have allowed us to present a myriad of choices to patients who desire esthetics and quality. This brings us to the different generations of bonding agents and their techniques. We will be discussing OptiBond FL (Kerr



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Corporation), Excite (Ivoclar Vivadent, Inc), and Clearfil SE (Kuraray America, Inc). Fourth-generation OptiBond FL requires the tooth to be etched, primed, and bonded; the fifth-generation Excite also requires etching but the primer and bond are combined. However, sixth-generation Clearfil SE does not require etching, only primer and bond. As with all bonding agents, the primer should be handled with care during the procedure. Proper handling and transfer of primer/bond in fourth-, fifth-, and sixth-generation bonding agents is of imminent importance.

Considerations for General Bonding Procedures

First, it is important to note

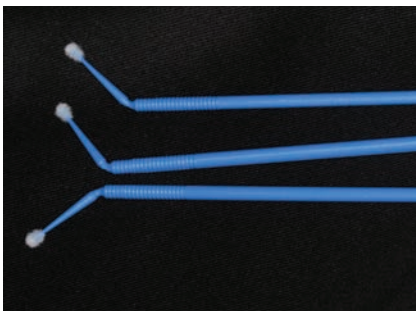


Figure 1—Always keep extra brushes on hand in case of contamination.

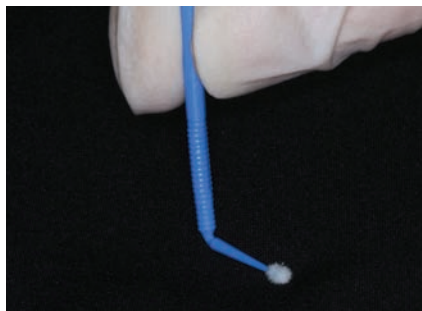


Figure 2—Bend the tip of the brush so that easy access to the tooth is achievable, bending with the countertop rather than with latex gloves.



Figure 3—The assistant preparing the bonding agent should hold the bottle very close to the microbrush and apply one drop only the moment it is needed.



Figure 4—If you are using a fourth- or sixth-generation bonding agent, this bottle will be labeled primer.



Figures 5 and 6—When restoring multiple teeth, it may be useful to place the bonding agent in a plastic well, making certain that it is held close to the patient.



some of the basics when discussing any bonding technique. Remember that the composite is hydrophobic (water hating) and is to be placed onto a hydrophilic (water loving) environment—the tooth. In other words, how do we mix oil and water? A bonding agent is a hybrid layer that allows the tooth and the restoration to coexist. The goal is to optimize adhesion of the restorative materials to the enamel and dentin by replicating the integrity of the natural tooth. A smooth transition of the bonding agent to the prepared tooth will ensure a strong restoration, but only if the technique flows smoothly and the most appropriate material is used. When the bonding agent is to be transferred to the tooth, one of the most critical components is applying the bonding agent or primer with sufficient solvent. The solvent is the key to a great bond. It is water loving and is what pulls the monomer into the dentinal tubules. All bonding agents contain at least one of the three main solvents: acetone, ethanol, or water. All three can and will evaporate if left exposed for a given length of time. My personal rule is if the material is exposed for more than 45 seconds, we get a new drop.

The ability to maintain a dry field is sometimes the most difficult task when restoring a tooth, especially in the posterior area. Use of a rubber dam, cheek patches, cotton rolls, and vigilant saliva evacuation is necessary to avoid contamination during the bonding process. Always keep extra brushes on hand in case of contamination (Figure 1) and be sure to use a different applicator for each material; different color microbrushes will keep confusion to a minimum when transferring to the dentist. Also, bend the tip of the brush so that easy access to the tooth is achievable, bending with the countertop rather than with latex gloves (Figure 2). **[QA. Why the counter**



Figures 7 through 9—Make note that anything other than a tight seal on the bottle is unacceptable.



Figures 10 and 11—With adequate bonding and a good restorative material, it will be as if we are mixing oil and water to simulate the natural tooth, where composite and tooth appear synonymous.

top?] The assistant preparing the bonding agent should hold the bottle very close to the microbrush and apply one drop only the moment it is needed (Figure 3). If you are using a fourth- or sixth-generation bonding agent, this bottle will be labeled primer (Figure 4). If using a fifth generation, there is only one bottle. When restoring multiple teeth, it may be useful to place the bonding agent in a plastic well (Figure 5), making certain that it is held close to the patient (Figure 6). The solution should not sit more than 1 minute so the solvent does not evaporate. If using a fifth-generation bonding agent, turning off the overhead light will extend working time and prevent premature curing.

Essential to the longevity of the remaining bonding agent is the complete replacement of the cap as soon as possible. Make note that anything other than a tight seal on the bottle is unacceptable (Figures 7 through 9). This will preserve the

remaining product. My assistant knows that if she accidentally leaves the top off, a new bottle must be ordered. **[QA. Deleted text as it was unnecessary. Point was already made.]** If the bonding adheres successfully, a lasting restoration is the end result.

Conclusion

As patients become more educated about dental products and procedures, it is imperative that dental professionals use great care when performing restorative work. The integrity of the bond and marginal adaptation to the tooth surface are essential for clinical success. With adequate bonding and a good restorative material, it will be as if we are mixing oil and water to simulate the natural tooth (Figures 10 and 11), where composite and tooth appear synonymous. Following the concepts in this article will allow the dentist to deliver an optimal restoration with predictability.

