



In Practice

WITH DR. RONALD E. GOLDSTEIN

Bonding Agents—What Are You Using in Your Private Practice?



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Adhesion dentistry has virtually changed the face of dentistry. Almost every phase of dentistry today uses some technique, either directly or indirectly, related to adhesive dentistry. I was proud to be one of the very first individuals that worked with prototypes of all phases of bonded chemistry in the late 1950s and early 1960s. So it is both appropriate and timely for an update from some of our leading practitioners to see just what they are using and why they use certain products in their practices.

What dental materials do you use bonding agents with?

Daniel CN Chan, DDS—We use bonding agents with ceramics, and metal- and resin-based materials.

John Kanca, DDS—I use dental adhesives with nearly every procedure I perform in the office.

Craig A. Mabrito, DDS—I always use bonding agents with all-ceramic, direct-resin, and indirect-resin restorations. Sometimes I bond ceramic crowns with a reinforced core or metal-ceramic crowns where the preparation is very short and retention is compromised. Where access to an area is compromised and, con-

sequently, isolation is difficult, I attempt to cement. Planning treatment for the type of restorations to be used is accomplished with these factors in mind.

What bonding agents do you currently use and how long have you been using them?

Daniel CN Chan, DDS—We are currently using two-bottle OptiBond FL[®] adhesive and primer system (Kerr Corporation) as our primary bonding system for resin-based materials. We have used it for more than 5 years with excellent clinical results. Our experience is backed by other clinical studies. We are currently using Amalgambond[®] Plus (Parkell, Inc) as our primary bonding system for amalgam restorations, as auxiliary retention, and for reduction of sensitivity. [QA. Edit okay?] For ceramics, there are several luting cement systems that we use, such as RelyX[™] (3M ESPE) and Variolink[®] (Ivoclar Vivadent[®], Inc).

John Kanca, DDS—I use Simplicity (patent pending; Apex Dental Products, Inc), which is a self-etching adhesive system that I created and in which I have a financial interest. One of the biggest failings of self-etch systems is their failure to properly

etch enamel. I set out to create a self-etch system that would properly etch enamel. Simplicity has been shown to etch even uncut enamel comparably to phosphoric acid.¹ [QA. The name of the article is in the reference section. Please verify reference information.]

Craig A. Mabrito, DDS—OptiBond Solo Plus[™] (Kerr Corporation) in the unidose packets has been my bonding agent of choice for the past several years. I like having one bonding agent for all procedures. The unit dose and the activator allow for simple use.

Do you use one-step or two-step materials?

Daniel CN Chan, DDS—We have OptiBond Solo Plus[™] and Prime & Bond[®] NT[™] (Dentsply Caulk) as our two-step etch-and-rinse materials. They are included more as an introduction of a different class of material than for their bonding efficiency. We do not use one-step materials in our clinic. Our own research of one-step materials has indicated that this class of materials provides inferior shear bond strength and poor retention in clinical situations.

John Kanca, DDS—I have become very comfortable using a self-etch system and do not foresee returning to an etchant that requires rinsing. Self-etching systems are far calmer in application than etchant rinsing and spraying.

Craig A. Mabrito, DDS—The “two-step” is a great western dance and has also provided a very predictable bond to both enamel and dentin.

Have your patients had any sensitivity with bonding agents?

Daniel CN Chan, DDS—Very rarely. We have a fairly rigid protocol of using rubber dam isolation with composite bonding procedures. The lack of postoperative sensitivity must, to a great extent, be attributed to the isolation protocol. Overall, I feel that either the quality of the bonding agents have progressively improved or the operators have a better handle of the bonding procedure. Five years ago, I used to receive quite a number of calls from general dentists regarding sensitivity resulting from bonding procedures. The number of such calls has dwindled to next to zero.

John Kanca, DDS—Outside of having sensitivity because of occlusal prematurities, we essentially have not dealt with sensitivity for several years. If I were still using a rinse-requiring etchant, I also would use a desensitizer as insurance against sensitivity. However, desensitizers are not routinely required or recommended during use of self-etching systems.

Craig A. Mabrito, DDS—Sensitivity to bonded restorations is greatly overemphasized in the literature. I have found almost no sensitivity with bonded restorations using One-Step[®] (Bisco, Inc), All-Bond 2[®] (Bisco, Inc), or OptiBond Solo Plus[™]. Additionally, I have referred fewer people to the endodontist during the past 15 years than before we started total etching and bonding restorations.

Have you had any porcelain laminates or crowns come unseated because of debonding?

Daniel CN Chan, DDS—Very rarely. We advocate minimal preparation for laminates with only 0.3 mm to 0.5 mm of facial enamel removed. Bonding to enamel is fairly predictable. For anterior laminates, we usually employ the split-dam technique for rubber dam isolation. Such a

technique is effective to control moisture from breathing and saliva but is not 100% effective against gingival fluids. We do occasionally see microleakage and staining at the gingival margin of laminates.

John Kanca, DDS—I have one such occurrence of a crown being displaced and two veneers dislodged in the last 5 years.

Craig A. Mabrito, DDS—There is a small percentage of

lamine veneers that have debonded, but no crowns. This includes an extremely large number of restorations that date to when we were first beginning to restore teeth with Mastique laminate veneers (Dentsply DeTrey) in 1978.

If there is a problem with crowns it usually shows as a fracture rather than a catastrophic debond. Debonding of veneers

occurs mostly on anterior teeth where they have been used to reestablish anterior guidance in a bruxing patient. Because of the many advantages of bonded restorations over cemented full crowns in the anterior region, I continue to plan treatment with veneers and crowns for many patients with esthetic as well as functional compromises.

How long do you anticipate your bonded composite resin restorations to last before they need rebonding?

Daniel CN Chan, DDS—We subscribe to the maintenance-and-repair concept for adhesive restorations. Minor marginal discrepancy and/or wear are resealed at subsequent yearly recalls to prolong the longevity of the restoration. We anticipate our adhesive restorations to last as long, if not longer, than amalgam restorations.

John Kanca, DDS—This is a nebulous question. I anticipate most direct restorations to last 10 years. The very largest restorations may not last quite as long but I think even that is changing as we speak. I expect bonded indirect restorations to last at least that long also.

Craig A. Mabrito, DDS—I usually explain to patients that bonded composite restorations can last 7 to 15 years. I typically see them last at least 10 years and often much longer. A small Class I restoration will last a great deal of time, possibly longer than 15 years. Decay around the margins and breakage have not been the weak link for composite resin restorations. Wear and staining have been reasons for replacement.

Whose research do you trust?

Daniel CN Chan, DDS—Any publications in peer-reviewed journals carry more weight than manufacturers' claims. As long as the fiduciary interest is disclosed and the publication passed the peer review process, I do not discriminate research publications that are either supported by an industrial grant or reported by the company themselves. As far as bonding research publications are concerned, I see little value in

in vitro bond strength studies. They tend to be mostly product comparison in nature and often-times contradict one another. Overall, the bond strength studies are at best preliminary screening tests. I would like to see more basic science research that contributes more to the understanding of the underlying bonding mechanism.

John Kanca, DDS—I am very comfortable with the research of good friends whose work I know. Ray Bowen, David Pashley, Harald Heymann, Ed Swift, Murray Bouschlicher, Gerry Kugel, Gerry Chiche, John Kois, Frank Spear, David Garber, and Van Haywood are among those whose work is beyond reproach. This list is not exclusive but the writings of those on it can be readily believed no matter where it appears.

Craig A. Mabrito, DDS—It is important to know for whom someone is working or how they may be associated with a manufacturer. Because a lack of complete disclosure is common in dentistry, it is difficult to know whose research to trust. I read and listen to several sources and try to find some consensus before making decisions. Obviously if all research was reliable, there would not be so many variations in the advertisements for bonding agents.

Do you feel some companies are more ethical and reliable regarding their research? If so, which ones?

Daniel CN Chan, DDS—Typically, I always take all manufacturers' claims, regardless of which company, with a grain of salt. Unfortunately, well-controlled clinical studies sponsored by companies are few and far in between. When they are available, they are usually product specific and material orientated. By the time meaningful data is available, a new and improved version is being marketed, rendering the data obsolete.

John Kanca, DDS—Perhaps it is wise to simply state once again that many of us are comfortable with those with whom we interact often and know well. Thus I do not assert that this list is exclusive, but simply state that I know many people at Ultradent

Products, Inc and 3M ESPE personally and have great faith in their data.

Craig A. Mabrito, DDS—Because companies exist to sell their products, they have to design research to favor their inventory. Some manufacturers come out with products without extensive clinical experience and rely on the dental professional to test them on patients.

Other companies, such as Bisco, Inc, provide excellent research before bringing their products to market. This may be driven by the fact that Bisco, Inc is a privately held [QA. Do you mean owned?] company that has a scientist as CEO.

However, merely being publicly held or privately held does not mean that proper research is being accomplished before a

product goes out the door. There have been other privately held companies that have not done such a credible job as Bisco, Inc has done. Conversely, there are some great products that are from large public companies.

REFERENCE

1. Tay FR, Pashley DH, Mak YF, et al. Integrating oxalate desensitizers with total-etch two-step adhesive. *J Dent Res.* 2003;82(9):703-707. [QA. Please verify this is the article you are referring to. If not, please provide such information.]

