

WHY USE BONDED SEALANTS FOR EXPOSED VITAL DENTIN?

By Tony Woodward, DVM, AVDC

Fractured teeth are usually painful. When the pulp (nerve) chamber is exposed, the tooth is dead, or the tooth is infected, treatment options are extraction or endodontic therapy. Frequently fractured vital (live) teeth will have dentin exposed. Dentin is comprised predominantly of fluid filled microtubules. The fluid column in the tubules is intimately associated with nerve endings in the pulp. Anything causing the fluid column to move, such as physical contact or thermal expansion/contraction, is painful for the patient. Additionally, the fluid tubules are large enough for bacteria to migrate directly into the pulp.

Smoothing a fracture site and applying bonded resin sealants serves several purposes. Smoothing the fracture site decreases plaque adherence and calculus accumulation, and decreases soft tissue irritation from the fractured surface. Plugging the dentin tubules with the bonded sealants decreases sensitivity and helps prevent infection of the pulp chamber. After the application of the bonded sealants, the tooth is able to provide a permanent "patch" on the inside through the deposition of reparative dentin. Typically, this procedure is only done once per fracture site.

As mentioned previously, this technique is intended for use on live teeth with dentin exposure. Prior to applying bonded sealants, you should try to determine that the tooth is alive. Typically, a live tooth is not discolored, has no radiographic indications of disease, and transilluminates light evenly when a halogen light source is shone through the tooth. Exam of the contralateral side can provide "normals" for reference.

The same techniques presented here can be used after reduction of traumatic occlusion, to treat teeth with enamel hypocalcification, and after reducing tight inter-proximal areas to improve access for cleaning.

The bonded sealant kit by DentaLaire provides all materials needed for smoothing and sealing exposed dentin. The following is a brief synopsis of the techniques and use of the materials in the bonded sealant kit. If you do not have a latch key contra angle or a curing light, you will need to obtain them.

1. Ensure the tooth is a candidate for the procedure as detailed above. Remember, this technique is not suitable for teeth with an exposed pulp chamber, endodontically infected teeth, or non-vital (dead) teeth.
2. Using a Dura-white stone in a high-speed handpiece, gently shape the fractured area, trying to bevel the edges of the fracture. Take care to avoid penetrating the pulp chamber of the tooth. Use adequate water spray to flush away debris and provide visualization.
3. Use all four grades of the Shofu polishing disks, starting with coarse, and progressing to medium, fine, and super-fine. Spray the tooth with an air-water syringe after each grade of disk to remove abrasive debris. These disks are seated on a mandrel placed in a latch key contra-angle, that fits the same low-speed motor as your polishing angles. The mandrels are included in the kit.
4. Acid etch the fracture site with a thin layer of the 37% phosphoric acid etching gel for 30 seconds, wipe off most of the gel, rinse for 30 seconds with an air-water syringe, and gently air dry. Avoid letting the gel contact the soft tissues. Properly etched surfaces will have a characteristic frosted appearance. After this point, you need to maintain a dry field, avoiding fluid contamination of the prepared site.
5. Place a drop of the "One-Step" bonding agent in one of the disposable mixing wells, and apply it to the prepared area with one of the supplied applicator brushes. Gently evaporate the volatiles in the bonding agent with 10-15 seconds of air directed on the fracture site. Then light cure the area for 30 seconds, following the safety instructions provided by your light curing unit manufacturer.
6. Without contaminating the surface, wipe off the oxygen-inhibited layer of resin present on the fracture site. Avoid wiping water or saliva on the prepared site.
7. Using the other half of the disposable well and a new applicator brush, place a thin layer of the "Fortify" unfilled resin on the area and light cure as before.
8. Check the surface for adequate smoothness. If desired, additional thin layers of Fortify may be added and light cured to improve the glassiness of the final surface.
9. Teeth treated in this manner should be re-radiographed in six months to ensure that treatment was successful, and that the teeth continue to be vital.
10. The surface layer of the sealants may wear away quickly, but the bonding agent penetrates the tubules for 100-400 microns.
11. The author treats all fractures one time, regardless of when the owner thinks they occurred.
12. Areas of chronic wear, such as table surface wear on canine teeth from carrying tennis balls around, are not good candidates for this procedure, as they have probably already sealed themselves with reparative dentin.

KIT INCLUDES

1. **DTP1102P One Step**, which is a universal light cure dental adhesive.
2. **DTP9031F Fortify**, is a "unfilled resin" used for coating areas of sealed dentin and composite restorative materials.
3. **DTP5503E Etch 37% Phosphoric Acid (5 gm syringe)**, is used to etch dentin and enamel prior to placing restorative materials.
4. **DTP24491 Super Snap Mini Kit**, is designed for easy, fast, and safe contouring, finishing, and polishing of fractured teeth and composites.
5. **DTP80496 Disposable Mixing Wells (48)**, these are ideal for handling and applying dental materials dispensed in small quantities.
6. **DTP80241 Applicators, Disposable (Light Blue) 100**, ideal precise application of dental materials.
7. **DA559UL Contra-Angle "U"**



DENTALAIRE PRODUCTS INTERNATIONAL

17150 Newhope St. • Suite 407 • Fountain Valley, CA 92708

(714) 540-9969 • Fax (714) 540-9947