

Talking with Patients

Dental Adhesives

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WHAT IS IT?

Dental adhesives, also known as bonding agents, are solutions used to assist in bonding fillings, caps, and veneers to teeth. One of the first documented uses of dental adhesives was reported in the mid-1950s by a dentist-scientist named Michael G. Buonocore. Dr. Buonocore noticed that by simply etching the dental enamel with an organic acid, the retention of resinous filling materials to enamel surfaces increased considerably. This finding was revolutionary, for still today, dentists around the world use an enamel etching technique similar to that introduced by Dr. Buonocore more than 50 years ago.

Dental adhesives are essentially a mixture of resin monomers diluted in water and/or solvents such as ethanol or acetone. These solutions are applied to etched and/or primed enamel and dentin surfaces prior to the application of the resin-based filling material. Simplified dental adhesives contain acidic molecules that etch the tooth simultaneously with bonding, while more traditional adhesives require multiple solutions to be applied sequentially. The application technique is critical for the success of the procedure.

WHEN IS IT NEEDED?

Dental adhesives are used to bond resin-based materials to dental

enamel and dentin with two primary functions: retention of the filling and sealing of the tooth-filling interface to prevent leakage. Prior to the advent of adhesive dentistry, fillings had to be locked into undercuts made at the expense of sound dental tissues. By using dental adhesives, dentists can minimize the amount of tooth structure sacrificed to achieve retention.

Virtually all modern materials used in dentistry, including tooth-colored resin-based fillings and porcelain veneers, benefit from the use of dental adhesives. In fact, many additional esthetic and conservative dental procedures such as diastema



Figure 1. A, Before. The upper right central incisor is chipped. B, After. The chipped tooth was repaired using dental adhesives and a tooth-colored filling material.

closures, bonded orthodontic braces, and bonded bridges, would not be possible without the use of dental adhesives.

CONCLUSIONS

Dental adhesives are resinous solutions used to bond various types of fillings and restorations to the teeth. By using dental adhesives, the dentist can conservatively achieve

good filling retention without significant loss of tooth structure, and the tooth-filling interface is better sealed.

DISCLOSURE

The author does not have any financial interest in the manufacturers whose materials are discussed in this article.

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(The following photographs illustrate the use of dental adhesives and a tooth-colored filling to repair a chipped front tooth [Figure 1A,B].)

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