THE BOTTOM LINE: RESIN BOND TO DENTAL CERAMICS

Silica-based ceramics are preferred materials for conservative indirect restorations (eg, laminate veneers and ceramic inlays/onlays) requiring resin-bonding techniques for their final cementation. Even high-strength ceramic restorations benefit from adhesive cementation, especially when retention is compromised. The following conclusions can be drawn from the articles discussed:

- Acid-etching and silane application achieve strong and durable long-term resin bonds to silica-based ceramics through micromechanical interlocking and chemical bonds. Earlier studies emphasize the importance of surface microstructure, whereas more recent studies find silane application and therefore chemical interaction to be the main reason for reliable resin-ceramic bonds.
- The composition and physical properties of oxide-based high-strength ceramics make resin bonding more difficult and the adhesive interface more susceptible to failure. Conventional acid etching and dimethacrylate composite resin cements fail to provide long-term durable resin bonds. Preferred bonding methods are air abrasion with aluminum oxide particles and the use of composite resin luting agents containing special adhesive monomers.

SUMMARY

The current evidence favors the use of adhesive techniques to support ceramic restorations. The resin bond to silica-based ceramics is well documented and typically achieved through acid etching and silane application. The few in vitro studies on the resin bond to high-strength ceramic materials suggest that resin bonding to these materials is less predictable and requires substantially different bonding methods than does bonding to silica-based ceramics.

Talking with Patients

Periodontal Splinting

André V. Ritter, DDS, MS

WHAT IS IT?

Periodontal splinting is the immobilization of teeth that have become loose owing either to loss of bony support around the tooth or to trauma. Periodontal splinting can be achieved with a fixed partial denture, orthodontic wires or braces, or bonding with tooth-colored, resin filling materials, for example. Recently, strong and flexible resinbonded reinforcing fibers have become available for periodontal splinting. Because of their ease of use, esthetics, and good results, resin-bonded fibers are currently the material of choice to use for most teeth in need of periodontal splinting. When these special fibers are used, the affected teeth must first be covered with a resin dental adhesive. Then the flexible fiber-like material is bonded to the teeth using a toothcolored, resin filling material. The result is a strong, durable, and esthetic splint.

WHEN IS IT NEEDED?

Periodontal splinting is primarily recommended for teeth adversely affected by periodontal disease. In advanced stages of periodontal disease, the inflammation of the tooth ligament and the loss of bone around the tooth's root(s) can cause the tooth (or teeth) to become loose. Loose teeth are not only uncomfortable; the excessive mobility can make it difficult for the dentist to treat the periodontal



Photograph courtesy of Harald Heymann, DDS, MEd, University of North Carolina at Chapel Hill, NC, USA

disease. Splinting helps maintain the stability of the teeth while the periodontal condition is treated. In some cases the periodontal splinting is maintained indefinitely until tooth loss occurs.

Periodontal splinting also is used to secure teeth loosened temporarily by trauma or after replantation following tooth loss (see Talking with Patients, Volume 16, Number 4). In these cases the splinting maintains the tooth in the proper position so that the periodontal ligament can heal around the tooth's root. Once healing occurs, the splint can be removed. Regardless of where it is used, the periodontal splint must extend to teeth that are relatively stable and firm to be effective.

CONCLUSIONS

With periodontal splinting, teeth that have become loose owing to periodontal disease or dental trauma are immobilized so that the periodontal condition can be treated and/or the tissues surrounding the tooth can heal. Periodontal splinting can be used temporarily or indefinitely. Many periodontal splinting techniques are available, but the most popular technique is the use of special fibers bonded to the tooth by means of tooth-colored, resin filling materials and dental adhesives. These splints are effective, comfortable, and esthetic.

The following photograph shows teeth adversely affected by periodontal disease that have been splinted with resin-bonded fibers.

©2004 BC Decker Inc



Copyright of Journal of Esthetic & Restorative Dentistry is the property of B.C. Decker Inc. and its content may not be copied or emailed to multiple sites or posted to a listserv without the copyright holder's express written permission. However, users may print, download, or email articles for individual use.