Dentistry has seen a number of liner/base materials come and go over the years, and even now, use of a liner is not an everyday practice in many offices. However, proper use of a liner/base can help provide dentists with extra assurance that restorations will be long-lasting and sensitivity free. For this reason, it is important for clinicians to be aware of the materials currently available and the reasons for using each.

The basic function of a liner is to adapt to the internal surfaces of a cavity preparation to create a level surface and compensate for irregularities and defects, which helps in the subsequent placement of the definitive restorative materials. It also helps improve the seal for pulpal protection. When selecting a liner material, dentists typically think of two options: a glass ionomer (GI) or resin-modified glass ionomer (RMGI) liner, or a flowable composite.

**Flowable or RMGI?**

Flowables are sometimes used as a liner in composite restoration cases, or in crown and bridge cases to block out undercuts before taking an impression. In composite restoration situations, these products can be helpful in cases with atypical preparation designs that have undercuts or angulations where the dentist may have a difficult time placing direct composite. In these cases, using a flowable composite as a liner can help the dentist address issues with access and visibility, building the preparation out before filling it with the composite restoration. Some dentists use flowable as an additional layer after adhesive placement to perhaps decrease microleakage.

However, a more classic liner/base material, such as a GI or RMGI, provides clinicians with a tool that suits multiple clinical situations. The chief purpose of these materials is to help protect against post-operative sensitivity, which they accomplish in many ways. They act as a thermal barrier, are antimicrobial, seal the dentin and prevent microleakage, and also provide stress relief in a restoration. Additionally, they do not remove the tooth’s smear layer and are able to bond in a moist environment. On top of their utility in preventing post-operative sensitivity, GI and RMGI liners serve as a renewable source of fluoride under a restoration and help reduce recurrent decay. This is extremely important in areas of deep decay where increased dentinal tissue is lost.

Using a product such as 3M ESPE™ (3MESPE.com) Vitrebond™ Plus Light Cure Glass Ionomer Liner/Base can be particularly helpful in a case such as a direct composite restoration following deep decay removal.
Proper use of a liner/base can help provide dentists with extra assurance that restorations will be long-lasting and sensitivity free.

A preparation. Creating proper coverage around the entire internal perimeter of be challenging to achieve an even layer flowable as a liner is it can sometimes and greater potential for microleakage. can result in stress on the adhesive layer and composite. clinicians should consider the benefits of a non-shrinking base with high fluoride release that achieves a good bond to dentin. This offers greater ben-

Selecting the right liner/base material

A RMGI liner/base material performs a number of functions in a restoration that a flowable composite does not. While flowables certainly can be used as liners, dentists should understand their limitations to determine when it is and is not advisable to use them. Clinicians should keep in mind their preferred flowable’s shrinkage properties, as these materials can sometimes shrink up to twice as much as condensable composites. This can result in stress on the adhesive layer and greater potential for microleakage. An additional difficulty with placing flowable as a liner is it can sometimes be challenging to achieve an even layer around the entire internal perimeter of a preparation. Creating proper coverage without pooling and extensions may be more difficult than it seems.

Dentists also sometimes cite the flexural strength achieved by layering flowable with packable composite as a rationale for using flowable as a liner. They say that by placing an assemblage of layers that more or less match the flexural strength of the layers of the tooth as it is built up, this technique can help with stress distribution. However, using a liner/base material, which more closely matches the coefficient of thermal expansion and the flexural capabilities of the tooth structure itself, may achieve this goal more effectively.

In terms of ease of use and versatility, a liner/base like Vitrebond Plus gives dentists a helpful tool as well. The material is non-sticky and very easy to manipulate; it can be easily dragged and placed without tackiness. It is light curable, and has an optimal film thickness that helps it stay where it is placed without pooling. Additionally, it does not require an adhesive underneath it, but achieves both chemical and mechanical adhesion to dentin. As compared to earlier generation glass ionomer materials, its solubility potential is decreased because of the incorporation of resin. Finally, its two-part liquid/paste dispensing system makes it easy to get the proper proportions of base to catalyst.

Making the right choice

In areas of deep decay where post-operative sensitivity is likely to be an issue, the unique chemical and physical characteristics of liner/base materials can help dentists achieve better results than a flowable. In any situation that calls for a liner, clinicians should consider the benefits of a non-shrinking base with high fluoride release that achieves a good bond to dentin. This offers greater ben-

James Braun, DDS, MS, has been in private practice specializing in Prosthodontics in Saginaw, Mich., for more than 30 years. He has presented lectures and workshops on esthetic restorative dentistry at many national association meetings, including the ADA Annual Session, the Greater New York Meeting and the Chicago Midwinter Meeting, along with a great number of state meetings. He has also published articles in several dental journals on clinical restorative issues. Dr. Braun received both his DDS degree and his MS degree in Prosthodontics from the University of Michigan. Dr. Braun can be contacted at 989-793-5551 or jbraundds@sbcglobal.net.