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Clinical Tips from
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Bulk Fill Composites: Good or Bad?

As many of you know I spend a good bit of time on DentalTown discussing various topics. Most of the topics falling under the Restorative Dental category (ok, maybe I've posted a political thought or two along the way.). Recently, I was thinking about a past thread concerning the effectiveness of Bulk Fill materials. Many concepts were discussed, terms such as directed shrinkage were reintroduced, and many products were discussed. In the end, I'm not sure the lengthy back and forth did much to address the original question: "Bulk fill, is it for real?"

So let's say you have a large Class I, as pictured below. As you know the C-Factor of this type of prep is high (C Factor of 5....doesn't get much higher) and you'll need to do something to relieve the contraction stresses that could negatively impact your final results.

Large Class I Prep. C Factor = 5

In the past I would have recommended you incrementally fill the prep, pulse activating each layer. With the onset of bulk fill materials there is a faster, easier way to accomplish similar results.

All bulk fill materials are not created equal. (This is usually where the debate starts.) There are light cure only bulk fill materials such as Sonic Fill and dual cure materials such as Injectafil. Many people are passionate about both materials. A few differences:

Difference 1:
The dual cure materials utilize self initiating chemistries that spread the cure time over several seconds (30 - 45 seconds). The lengthened curing time allows the material to exist in a gel state while contraction (shrinkage due to polymerization) is taking place. When the composite is in a gel state it is able to absorb and dissipate contraction stresses. Light initiated materials polymerize as soon as they are subjected to light. The contraction stresses build instantaneously, being held within the composite, tooth, and / or adhesive.

Difference 2:
Direction of the shrinkage. Self cure materials shrink toward the warmest area in contact...thus the tooth surface. Light activated materials shrink toward the light. Imagine the implications for a large prep: the dual cure material will shrink and cure toward the tooth surface and your bonding agent, while a light activated material will cure toward the light and pull away from the tooth surface and bonding agent. Many refer to this as directed shrinkage and it certainly plays a significant role in the success of bulk fill materials.

Difference 3:
Many will now say, "but I've been using Sonic Fill and it works fine.". Ok, we can all agree the only way to cure Sonic Fill is with light. Aside from the shrinkage taking place instantaneously and the material curing toward the light (away from your bonding agent), the material needs to be translucent enough to allow light to penetrate to the bottom of the prep. That means, light needs to pass through up to 5mm of material and still have the strength/intensity to activate

the most critical layer...the layer in contact with your adhesive. If crosslinking is limited at the composite / adhesive interface the restoration is subject to higher failure rates due to weakened bond strengths. Further, the high level of translucency leads to "dead" or gray restorations. Personally I prefer to deliver a higher level of aesthetics than can be offered by a light-activated only bulk fill material.

Bulk fill materials are for real and they can be a tremendous time saver. In the end, the key to these materials is their ability to mitigate contraction stresses, crosslink to your adhesive and provide acceptable aesthetics. Injectafil is a fantastic choice that checks all these boxes.

Injectafil® DC

DUAL-CURE INJECTABLE COMPOSITE

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