Bulk fill materials - the ideal material for small class II restorations. A sample case with Ecosite Bulk Fill

Dr Andrea Fabianelli, DDS, PhD, MSc

Introduction

The common method of composite resin placement for large cavities is the technique where the restorative material is placed in subsequent increments of about 2 mm thickness in order to achieve a sufficient degree of conversion and low stress shrinkage. Recently, new resins, bulk composites, with the ability to be placed and cured in layers up to 5mm were introduced. The use of a bulk filling protocol reduces the amount of time required for the clinician to complete the restoration, which is beneficial both for practitioner and patient. In addition, bulk restorative materials demonstrate less stress at the interfaces with reduced microleakage. From a clinical point of view, they present good handling, permit the achievement of good contact points and some of them present good mechanical properties due to the high filler load and improved organic resin matrix. In daily restorative procedures, they seem perfect for many clinical scenarios. Most dentists only think to use of bulk fill materials when confronted with large cavities, but in fact, it can be beneficial to use them even in small to medium sized cavities. In this kind of restoration, it is not easy to use layering techniques such as the Centripetal Build Up Technique due to the reduced dimensions of the cavity. These small restorations get all the workflow advantages like the deep polymerisation achieved by bulk fill materials. Furthermore, due to their smaller size, they face per se even less shrinkage stress in high C factor cavities.

My favourite structural bulk material is Ecosite Bulk Fill (DMG). It presents very good physical properties such as low shrinkage stress (1.28 MPa), high compressive strength (> 300 MPa) and good flexural strength (>100 MPa). These characteristics are similar to the most common traditional nano hybrid composite materials available in the market. Ecosite Bulk Fill (DMG) also has some clinical assets such as handling, sculptability, and mimicry. This last aspect makes it possible to restore almost all teeth with just a single universal shade. Due to all the aforementioned aspects, this restorative material was the right choice for the following clinical case.

Fig. 1: Pre op occlusal view

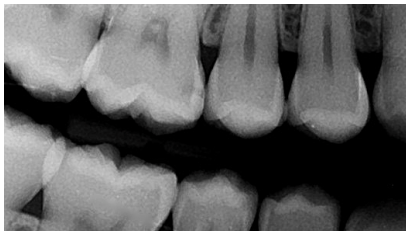

Fig. 2: Bite wing reporting an inter proximal mesial lesion on tooth 16

Fig. 3: Rubber dam in place

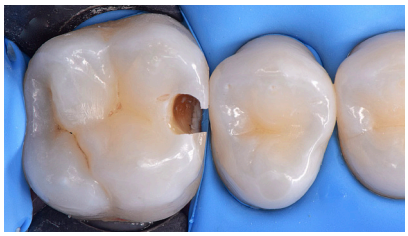

Fig. 4: Occlusal access to inter proximal lesion

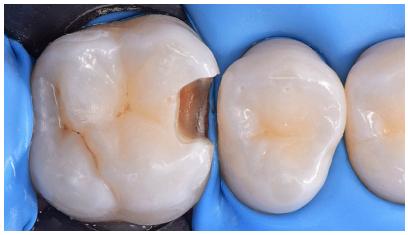

Fig. 5: Cavity cleaned and shaped

Clinical Case

The patient, a young teenage girl, came into the office for a dental checkup (Fig. 1). After X-ray bite wing examination (Fig. 2), a medium size interproximal cavity was reported in tooth 16. After local anaesthesia and rubber dam placement (Fig. 3), an indirect occlusal access to the lesion was performed (Fig. 4) and carious tissues removed. Margins were slightly beveled (Fig. 5) and a sectional matrix with a separating ring placed in order to achieve a tight contact point (Fig. 6). After acid etching the margins (Fig. 7), all in enamel (note the ability of the DMG Etching Gel to stay in place), a dentine bonding agent, LuxaBond Universal (DMG), was applied. Then a very thin layer of flowable composite resin, Ecosite Elements Highlight OA2 (DMG), was placed (Fig. 8) in order to further reduce the risk of microleakage and achieve better marginal adaptation. In addition, if there is a dischromic dentin as substrate, such as post amalgam stained dentin or tertiary dentin, this opaque flowable can reduce stain transmission through the quite translucent bulk material, improving aesthetic results. After light curing the flowable layer, Ecosite Bulk Fill (DMG) composite resin was placed in a bulk application, carved and light cured for 20 seconds (Fig. 9). Finally the restoration was finished and polished (Fig. 10), the rubber dam was removed (Fig. 11 and 12), a radiography performed to check margins (Fig. 13) and the occlusion checked.

Conclusion

The use of Ecosite Bulk Fill (DMG) allows us to achieve good aesthetic and excellent clinical performance in a short period of time. The special characteristics of this material give the practitioner a fast and reliable composite, with low stress at the margin, minimum marginal gaps, good mechanical performances and, due to its chameleon abilities, good aesthetic. It seems only logical to also use it in little-to-medium class II cavities!

Fig. 6: Application of a sectional matrix and a separating ring

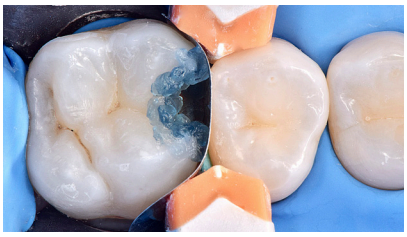

Fig. 7: Selective enamel etching

Fig. 8: Application of LuxaBond Universal (DMG) and a thin layer of Ecosite Elements Highlight OA2 (DMG)

Fig. 9: Application of Ecosite Bulk Fill (DMG) in just one single increment.

Fig. 10: The restoration after polishing

Fig. 11: Occlusal view of the finished restoration

Fig. 12: Lateral view of restoration after rubber dam removal

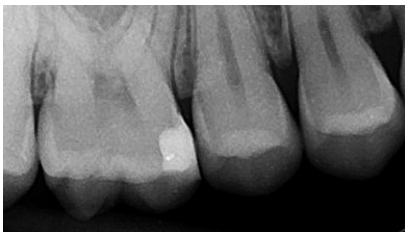

Fig. 13: Radiological check: note the good radiopacity of Ecosite Bulk Fill (DMG)

References:
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Contact:
Dr Andrea Fabianelli
Via Gramsci 42 b
52044 Cortona Arezzo
Italy