

A temporary alternative for the inlay or onlay: the co-curing technique

With the availability of glass-ionomer cements with different modes of curing, economical composite restorations can be achieved even for large cavities. SDI offers the materials and technology which allow dentists a simple handling technique and give patients highly aesthetic results.

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For many years dentists have been restoring teeth which have been damaged by caries, with tooth-like aesthetic materials. This became possible following the development of the resin-based composites, which have been a fundamental part of daily practice for more than 20 years and have been continually improved over time. Other materials like polyacid-modified resin composites ('compomers'), organically-modified ceramics ('ormocers') and glass-ionomer cements can also be used for tooth like restorations of either a temporary or a permanent nature. However, all those materials have a limited range of indications according to the size of the cavity. Even though the fillers and the matrix properties of today's resin composites make it possible for these materials to be used in high stress posterior fillings, many "conservative" dentists would use surgery-fabricated inlays or onlays in order to achieve a natural aesthetic appearance.

There also are clinical situations where it is not absolutely clear which treatment would be best at the time, possibly due to waiting periods, lack of compliance, or the patient's financial situation. Such factors can considerably influence the time as well as the manner of treatment.

Special Indications

If, for example, the damage to the crown is so extensive that an indirect adhesive restoration is necessary, the resulting cost will not be acceptable for every patient.

Which alternatives can be offered?

A similar challenge presents itself if endodontic treatment of the tooth was done first. The coronal closure with a permanent restoration until possibly 6 months after treatment! The temporary solution should be such that the patient can chew comfortably and the remaining tooth structure is protected.

A time-saving, simple but reliable restorative technique with minimal cost to the patient would therefore be indicated, and not only for the above-mentioned clinical situations.

One solution for these problems is the so called 'co-cure' technique, which is published by the Australian dental material manufacturer, SDI Ltd. It is a hybrid filling technique, which combines the wear resistance and polishability of a resin composite with the strong dentine bonding and very low setting shrinkage of glass-ionomers cements. Since glass-ionomer cements release fluoride and are more moisture tolerant than resin composites may also be beneficial in situations where the patient tends to develop secondary caries or the cavity cannot be kept entirely free of moisture.

Co-cure technique

The procedure is very simple and the materials needed are easily manageable.

After cavity preparation, the entire cavity is etched for 5 seconds with 37% phosphoric acid (Super Etch; SDI Ltd.). After rinsing and drying with oil-free air, the conventional (self-cure) glass-ionomer cement (Riva Self Cure; SDI Ltd.) is placed into the preparation up to the dentine-enamel junction. In non-approximal cavities it is possible to fill up to the contact area. The cement is now starting to set and the clinician can start with the application of the second component. For this, resin-modified (light curing) glass-ionomer cement (Riva Light Cure; SDI Ltd.), prepared and mixed from its powder and liquid components to a smooth paste, is now smeared with a microbrush, over the setting conventional glass-ionomer cement and the enamel margins. Unlike with other resin composite restorations, this adhesive is not cured; instead, the resin composite is now applied and the cavity is completely filled. It is not necessary to work in 2-mm increments. Cure for 40 seconds with the photocuring light. While curing, heat is generated, which speeds up the setting of the conventional glass-ionomer cement, so there is no need to wait for it to set. Contour and finish can now be done using standard techniques. The resulting restoration will be aesthetically appealing.

Summary

SDI offers glass-ionomer cement materials, which make the treatment of large cavities with resin composites possible, while achieving maximum aesthetics. The so-called 'co-cure' technique proves to be a time saving procedure in which a resin-modified (light curing) glass-ionomer cement is used as an adhesive, which compensates for the shrinkage of the resin composite.

Working in 2-mm increments is not necessary and a strong chemical bond between composite and glass-ionomer cement is achieved.

The dentist can therefore place an economical, yet still effective and aesthetic restoration, which is a practical alternative in certain clinical situations.



Starting situation



Excavation



Etching



Riva Self Cure



Riva Light Cure



Light Curing



Finished restoration



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