Not all dental filling materials are equal

Selecting the best choice for posterior restorations

Glass ionomer cements (GICs) and composite resins have been successfully used for a variety of indications in direct filling procedures for many years. Both materials are considered to be excellent amalgam alternatives, but they both have their respective strengths and weaknesses. Over time, the spectrum of their applications has grown wider and more sophisticated.

Dr. Eduardo Mahn

Spectrum of their applications and weaknesses. Over time, the...
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distinct appearance of a GIC. Secondary caries had formed in the distal area. According to the patient, it had been placed less than two years previously. Furthermore, we took note of a filling made of Tetric Ceram (Ivoclar Vivadent) in tooth #46 that had been placed in our surgery more than eight years ago. The restoration was clearly worn out after all this time. Nevertheless, the margins were still intact (Fig. 1).

We recommended that the filling in tooth #47 be replaced. Figure 2 shows the working field isolated with a rubber dam (OptraDam Plus, Ivoclar Vivadent) to ensure clean and safe placement of the restorative material. The old filling was removed and carious tissue was excavated. An adhesive (Tetric N-Bond Self-Etch) was placed directly on the tooth structure and scrubbed in for 30 seconds (Figs. 3a & b). The solvent was evaporated with a strong stream of air. Then, the surface was light-cured with a third-generation LED polymerisation unit for 10 seconds.

First, a layer of flowable composite resin (Tetric N-Flow) was placed in the cavity (Fig. 4) and light-cured for 10 seconds. Subsequently, the filling was built up with shade A2 of the universal composite resin Tetric N-Ceram. A non-stick modelling instrument (OptraSculpt, Ivoclar Vivadent) was used, with which the cusp slopes and tips were faithfully reproduced. This instrument is supplied with various working tips to satisfy different clinical indications. In this case, the chisel shape with the pointed tip end was used to sculpt the fissures.

The restoration was built up in four steps. One cusp was modelled and light-cured at a time. Figure 5 shows the situation after the distal cusps had been polymerised. In Figure 6, a mesial cusp is sculpted. Only as much composite resin as was necessary was applied and light-cured.

As a result, very few occlusal adjustments were necessary. After occlusal grinding, the restoration was polished with OptraPol Next Generation rubber tips (Ivoclar Vivadent, Fig. 8), which have a high diamond crystal content (72 wt %). This high diamond content achieved excellent polishing results in only one step. Figure 9 shows the finished filling with the marked contact points.

A complete list of references is available from the publisher.