In situations in which healthy tooth structure would have had to have been sacrificed in the past for the purpose of performing an indirect restorative procedure (e.g. inlay or partial crown), patients can now be offered a direct restoration with composite resin. The polymerisation shrinkage of composite resin restoratives, however, still remains a considerable challenge for both clinicians and dental manufacturers.

Bonding problems, microleakage, enamel fracture and post-operative sensitivity are just some of the risks that come with the process. Traditionally, dentists have resorted to incremental layering to better control the shrinkage stresses that occur in composite resin restorations, a method that can be very time-consuming, depending on the individual situation. Currently, traditional layering techniques are increasingly being replaced by the bulk-filling technique, which has made direct restorative procedures significantly easier. Some readers might argue that this technique could result in an increased risk of stress build-up. However, this problem can be controlled with many of the restorative materials available on the market today.

The dental industry has been pursuing the development of low-stress composite restoratives for many years. To date, only a few dental manufacturers have succeeded in doing so. Ivoclar Vivadent, for example, launched the new bulk-fill composite Tetric N-Ceram Bulk Fill, which can be placed in increments of up to 4 mm and contains an innovative photoinitiator (Ivocerin), as well as shrinkage stress relievers. The clinical case described here demonstrates restoration of a Class II cavity using the composite.

Clinical case

A 16-year-old patient presented to our clinic with a provisionally restored maxillary first molar (Fig. 1). Owing to a very deep carious lesion, her dentist feared that pulpitis might develop and referred her to a specialist. Percussion testing, bite testing and electronic

![Fig. 1: Pre-op situation: the maxillary first molar had been temporised. — Fig. 2: Cavity preparation: the temporary restoration and the carious dentine were removed with great care. — Fig. 3: After rubber dam isolation and the placement of a sectional matrix, the adhesive was applied. — Fig. 4: Tetric N-Flow was applied in the deepest area of the proximal box. — Fig. 5: Then the marginal ridge was moulded using Tetric N-Ceram Bulk Fill. — Fig. 6: The remaining cavity was filled with Tetric N-Ceram Bulk Fill. Occlusal depressions and cusp slopes were shaped to match the natural tooth anatomy. — Fig. 7: Verification of occlusion: the premature contact could easily be adjusted using finishing instruments. — Fig. 8: Final polishing was performed with OptraPol Next Generation and Astrobrush. — Fig. 9: The Tetric N-Ceram Bulk Fill restoration blended seamlessly with the natural surroundings in terms of occlusal anatomy and shade.](image-url)
Bulk Fill ensures a thorough cure in a depth of 4 mm. In order to adjust its height to that of the adjacent tooth, the marginal ridge was extended to 1 mm short of the upper end of the matrix band (Fig. 5). The remaining cavity was filled with a bulk increment of Tetric N-Ceram Bulk Fill (Fig. 6).

The material's viscosity and long working time (approximately 5 minutes) render the restorative procedure convenient and precise. The time was sufficient to sculpt and contour the individual increments (approximately 5 minutes). Morphological details such as cusps and fissures could be anatomically reproduced so that adequate masticatory function and food spillway were ensured. The restoration was contoured to meet the functional and aesthetic requirements. Finishing and polishing demanded only little time, as the preliminary work (modelling) had been done with great dexterity.

A premature contact was noted when the occlusion was verified (Fig. 7). Since an appropriate occlusal anatomy had already been created, this high-occuslon spot could easily be adjusted during the finishing step. Final polishing was performed with OptraPol Next Generation and Astrobrush (both Ivoclar Vivadent; Fig. 8).

Tetric N-Ceram Bulk Fill allowed an optimum restorative result to be obtained. The shape and shade of the final restoration blended seamlessly with the natural oral environment (Fig. 9).