

Basic Procedural Steps of a Class II Restoration

User Report

The four 'fours' are challenging in many ways: Direct restorations in first premolars require both high strength and high aesthetics, and when proximal surfaces are involved, there are even more difficulties. The clinical case presented in this article shows how dentists can successfully deal with the challenges of this type of restoration.

In the interproximal space, where accessibility and visibility are limited, the special benefits of SHOFU's latest generation flowable composite Beautifil Flow Plus X prove particularly helpful. Unlike most other categories of direct restorations, fillings extending to the interproximal area need to durably provide optimal conditions for the patient's daily oral hygiene routine.

This is why Beautifil Flow Plus X provides not only high strength and aesthetics, but also a number of benefits in terms of practical handling, designed to facilitate the restoration of the anatomical tooth shape with proper proximal contacts.

Each procedural step requires the restorative used to show different properties. On the one hand, the material should adapt well to the cavity surface, on the other hand, it should be highly stackable and easy to sculpt, even when it comes to little details, and it should by no means stick to the instrument.

To optimally meet all these requirements, SHOFU's new composite comes in two well-matched viscosities, each of which has ideal rheological properties for its intended use. Beautifil Flow Plus X F03 and F00 perfectly complement each other and can be combined as desired, step by step.

The flowable viscosity F03 is best suited for the cavity floor and the gingival margin. The stackable viscosity F00 allows clinicians to easily sculpt anatomical details and the marginal ridge.

A smooth surface and a smooth transition at the restoration margin are indispensable to minimising plaque formation.

The proximal surface below the contact point should not have any recesses in which food debris and plaque may accumulate. Beautifil Flow Plus X helps to avoid overhanging margins, and in addition, the surface smoothness of this innovative hybrid composite is so high that even easy to reach surfaces need not be polished.

Moreover, both viscosities of Beautifil Flow Plus X feature the unique protective concept common to all Giomer materials, which sustainably reduces the caries risk.

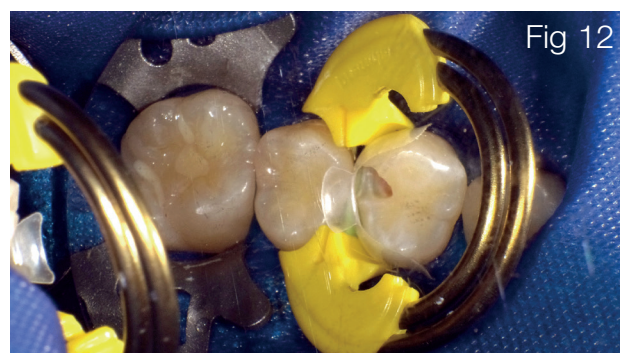
Clinical Case Example

The following clinical case treated by Dr Naotake Akimoto, Yokohama, Japan, illustrates the basic procedural steps of a Class II restoration in a premolar, from preparation to finishing.

The slightly complex location of the carious lesion shows how dentists can successfully remove all the carious tissue without unnecessarily extending the cavity.

Class II Restoration in a Premolar: Basic Procedural Steps

Fig. 1: Preoperative situation. Asymptomatic caries on the disto-proximal surface of tooth 24. The caries is located on the disto-proximal surface,



without extending to the occlusal pits and fissures. Closer examination of the disto-marginal ridge, shows that the caries extends centrally from the contact area. All images taken with an intraoral mirror are presented as seen in the mirror by the operator.

Fig. 2: Four teeth including the carious tooth are isolated with a rubber dam. Local anaesthesia is not used.

Fig. 3: The caries is opened. Since the caries extends centrally from the contact area, it is opened from the bucco-marginal ridge with a round diamond point (MI-1R, MiCD Diamond Set).

Fig. 4: More affected enamel is removed. The caries extends buccally from right beneath the distal contact point.

Fig. 5: After opening the caries, affected dentin is removed using a caries-disclosing solution.

Fig. 6: The caries-disclosing solution stains the affected dentin and gingival enamel red. The gingival enamel is partly demineralized.

Fig. 7: Closer examination of the cavity shows that the affected dentin, stained red by the caries-disclosing solution, extends buccally.

Fig. 8: Red, affected dentin is meticulously removed with a stainless steel round bur and a spoon excavator. The bur is used at a low speed with gentle pressure. The sharp-edged spoon excavator is used to gently and gradually remove the affected dentin, trying to avoid applying excessive pressure.

Fig. 9: Completion of cavity preparation. The affected enamel and dentin have been removed. In composite restorations, it is important to minimise the removal of occlusal enamel and avoid extending the cavity unnecessarily. In this case, the gingival enamel margin is securely protected from moisture contamination with a rubber dam. Proximal caries generally emerges from right beneath the contact point. Saliva or other body fluid contamination may reduce composite adhesion at the gingival margin and very likely lead to secondary caries. This is why proper bonding is particularly important.

Fig. 10: A temporary wall is created with a plastic matrix and a wedge.

Fig. 11: After placing a matrix and a wedge, it is most important to check that the matrix adapts to the gingival margin contour. Make sure there is no gap between matrix and enamel.

Fig. 12: A sectional ring is placed to press the matrix against the tooth and make it fit the anatomical shape, as well as to secure sufficient room between the affected tooth and the adjacent tooth. After placing the sectional ring, a filling instrument or the like is used to press the matrix against the proximal surface of the adjacent tooth and further adjust its shape.

Fig. 13: The surface is treated with BeautiBond Multi (one-bottle resin adhesive) and then dried and sufficiently light-cured.

Fig. 14: The cavity is filled with BEAUTIFIL Flow Plus X F03 from the gingival margin, trying to avoid using too much or too little material. Proximally, the material is placed up to contact point. Then, the cavity floor is covered, and the material is sufficiently light-cured. The cavity cannot be filled completely in one step. In the proximal area, it is between 4 and 5 mm deep. To completely light-cure the material, it needs to be layered.

Fig. 15: The marginal ridge is created with BEAUTIFIL Flow Plus X F00. Taking advantage of the non-slumping consistency of F00 after dispensing, the marginal ridge is sculpted with a probe and the upper embrasure is created. Then the composite is light-cured.

Fig. 16: The restoration of marginal ridge and cavity floor has been completed. Next, occlusion is restored with F00. First the buccal side is filled, then the palatal side. It is important to understand that the two pastes are used for different purposes; the flowable material F03 is more suitable for the cavity floor and the gingival margin, while the stackable material F00 is used for areas that require detailed characteristics.

Fig. 17: Occlusal filling has been completed, and the temporary wall has been removed. Excess material can be seen on the proximal

surface. It is removed with a sickle scaler or a spear-shaped superfine diamond point.

Fig. 18: Excess material on the proximal surface has been removed.

Fig. 19: After removing the rubber dam, the occlusal surface is checked. Occlusal adjustments and contouring are performed with a superfine diamond point.

Fig. 20: Contouring has been completed. The restoration surface is lustrous without any polishing.

Fig. 21: View from the mesial side. The marginal ridge and the cusp have been perfectly restored. Thanks to its flowability, the composite has adapted very well to the cavity margin (enamel).

Conclusion

Beautiful Flow Plus X perfectly holds its shape before light-curing. Most anatomical details can already be created in the uncured material. This feature helps to minimise excess removal after light-curing as well as contouring and occlusal adjustments after rubber dam removal.

What is more, the unique Giomer technology of SHOFU's injectable hybrid composite sustainably reduces the caries risk: The bioactive S-PRG filler particles of Beautiful Flow Plus X release and recharge fluoride and also buffer and neutralise acids. These caries-preventive effects make a very important contribution to long-term dental and periodontal health, especially in hard-to-reach interproximal spaces. ■

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Dr Naotake Akimoto,
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Fig 16



Fig 17



Fig 18



Fig 19



Fig 20



Fig 21

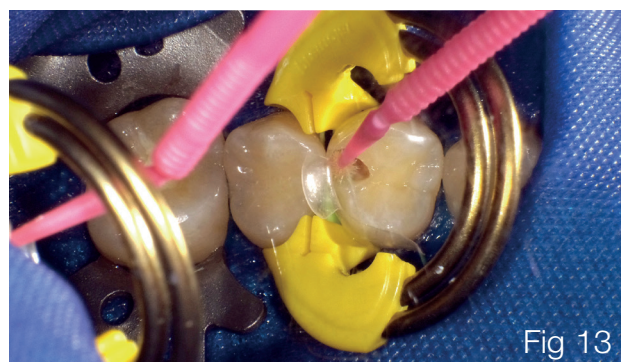


Fig 13



Fig 14



Fig 15