

Occlusal restoration of a molar – building up the correct occlusal anatomy directly from the syringe

Beautifil Flow Plus X, the innovative flowable composite, is the ideal choice for a wide variety of clinical indications, including those that require considerable mechanical strength. While the early flowables were at best suitable for minor repairs of defective restorations, SHOFU's new flowable generation, available in two well-matched viscosities, is strong enough to be used as the only restorative in a cavity – even when a complete posterior restoration needs to be replaced. The ease of use of this directly injectable hybrid composite takes time-saving and reliable occlusal restoration to the next level.

The following clinical case example of an occlusal-stress-bearing posterior restoration made with SHOFU's Beautifil Flow Plus X shows how this high-performance flowable can be used in Class I cavities. Dr Naotake Akimoto, DMD, PhD, Yokohama, Japan, replaced an insufficient metal inlay by a composite filling. The special challenges encountered in this particular case also included a cavity originally prepared for an inlay. However, the removal of healthy tooth structure for cavity extension was kept to an absolute minimum by lining the cavity with the self-levelling Beautifil Flow Plus X F03 material, which adapts very well to the floor and the walls and rounds any line angles.

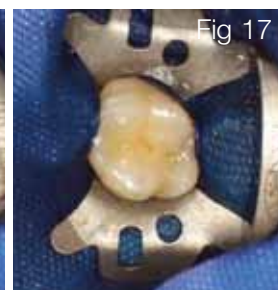
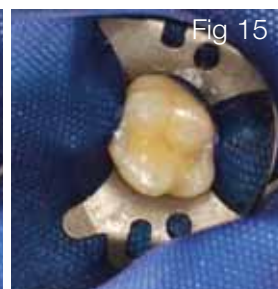
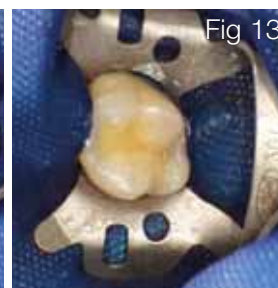
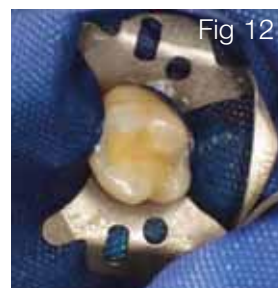
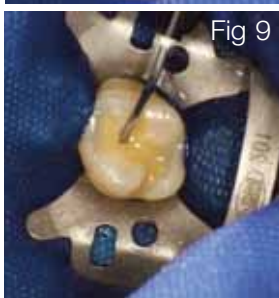
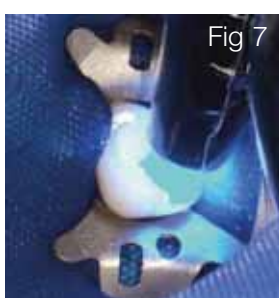
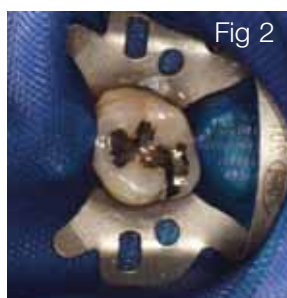
Beautifil Flow Plus X F00, though easy to extrude, shows a non-slumping consistency directly afterwards, when not under pressure, and neither sticks to the hand instrument nor sticks to, or oozes, from the needle tip. These features offer clinicians a new way to reconstruct tooth cusps: the material is extruded separately for each anatomical element to be created, then properly positioned and – only for stabilisation – briefly pre-cured. This also applies to pits and fissures. So the correct occlusal anatomy is largely restored by precise direct application of the plastic restorative. After final light-curing, only slight adjustments have to be made by contouring and finishing with one superfine rotary diamond bur.

And excellent results should be made to last. This is why both Beautifil Flow Plus X and the Bonding Agent of the two-bottle adhesive system FL-Bond II are Gioner products, i.e. they contain SHOFU's proprietary S-PRG filler, which helps to prevent recurrent caries by releasing fluoride and also by inhibiting bacterial colonisation.

Clinical Case: Occlusal Restoration of a Molar (Class I)

The occlusal anatomy of a molar was restored using Beautifil Flow Plus X F03 and F00.

Fig. 1: Preoperative situation: The



occlusal surface of tooth 26 had been restored with a metal inlay. The patient complained that the restoration was not flush with the tooth when touching it with his tongue. Due to poor marginal integrity of the restoration and partial secondary caries, the patient was informed that the existing inlay needed to be replaced by a composite filling.

Fig. 2: After local anaesthesia, a rubber dam was placed. Since this case was an occlusal restoration, only the carious tooth was isolated.

Fig. 3: The metal inlay was removed. Then the palatal side of the affected dentin was excavated after applying a caries detection dye. Cavity preparation was completed.

Fig. 4: Bonding was performed with FL-Bond II (2-bottle self-etch system). First, the Primer was applied.

Fig. 5: The Primer was left undisturbed for 10 sec. and then air-dried to evaporate the solvents. When properly treated with the self-etch Primer, the surface is glossy after air-drying.

Fig. 6: Then the Bonding Agent of FL-Bond II was applied. As a Giomer product, it contains the S-PRG filler.

Fig. 7: After levelling the bond layer by air-blowing, it was sufficiently light-cured.

Fig. 8: Cavity surface after application of the Bonding Agent. The gloss has disappeared.

Fig. 9: BEAUTIFIL Flow Plus X F03 was applied to the cavity floor in one thin

layer. The purpose was to cover the cavity floor and round any line angles. Then the material was sufficiently light-cured.

Fig. 10: Application of F03 completed.

Fig. 11: The Cusps were created with F00. First, the palatal groove on the disto-palatal side was filled towards the palatal cusp. F00 was dispensed from the needle tip and slowly spread from the palatal side to the cusp. The desired shape was gently created with the tip of a probe. The material should not be manipulated too much, to avoid ruining the created shape. Then the material was light-cured for 3-5 sec. for stabilisation. Final light-curing would be performed later.

Fig. 12: Next, the mesio-palatal side of the palatal groove was filled. F00 was dispensed from the needle tip and slowly spread from the palatal side to the cusp. The material was moved towards the distal cusp light-cured in Fig 11 to create palatal grooves. Then it was light-cured for a few seconds.

Fig. 13: The disto-buccal cusp was created. The needle tip was positioned at the cusp margin, and the material was injected into the cavity while adjusting the amount. Filling should be stopped before the material reaches the central groove, and the applied material should be moved towards the central groove with a probe. After adjusting the contour, the material was light-cured.

Fig. 14: The mesio-buccal cusp was created like the disto-buccal cusp. The

amount of paste was adjusted, while confirming the central and buccal grooves. The applied paste was moved gradually with a probe, and the mesio-buccal cusp shape was created. When trying to obtain the desired shape with a probe, the material moved out of the intended position. Thus, the probe was used only to move the material, not to create shape. The material was light-cured for a few seconds.

Fig. 15: Then the mesio-palatal cusp was created in the same manner as the mesio-buccal cusp. The cusp size was adjusted while confirming the position of the central groove. And the material was light-cured for a few seconds.

Fig. 16: The mesial pit was created. The amount of paste needed to create the mesial pit and groove was adjusted. And again the material was light-cured for a few seconds.

Fig. 17: The distal pit was created in the same manner, then light-cured for a few seconds.

Fig. 18: The central groove appeared underfilled, so a small amount of F00 was added. Then final light-curing was performed sufficiently.

Fig. 19: Immediately after filling. The rubber dam was removed. Then, contouring and occlusal adjustment was performed with a superfine diamond point.

Fig. 20 and 21: Postoperative situation: Class I restoration with F03 and F00.

Conclusion

This case example shows how the special rheological properties of the two flowable viscosities allow clinicians to use a time-saving restoration technique recommended by Dr Akimoto: Thanks to the non-slumping consistency of F00, the challenging occlusal anatomy with cusps, pits and fissures can be easily restored and largely shaped even before final light-curing. One superfine diamond will then be sufficient for the remaining adjustments.

The mechanical properties of SHOFU's flowable composite also prove their worth, especially when placing occlusal-stress-bearing posterior restorations: Beautifil Flow Plus X is strong enough for this indication and shows high gloss. And the bioactive effects of the Gioners support the clinical longevity of the restoration. ■

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Reducing the strain on your staff

In the modern dental practice, routine reigns supreme. With higher patient volumes, a constant need for speed and efficiency, and demands growing all the time, it makes sense that staff can soon feel overstretched.

As such, professionals need to look at ways to reduce the strain on the team whilst also continuing to provide exceptional service in a timely, efficient manner. This is especially true when it comes to infection control.

Stress leads to mistakes

It's no secret that infection control can be a time consuming process. Instruments need to be autoclaved, surfaces need to be decontaminated and stringent standards need to be met to limit the chances of disease being spread.

By combining the time needed to effectively perform decontamination to the correct standard with the countless other tasks that fall under the remit of dental professionals, it's easy to see why people can quickly feel overburdened by their duties. Whilst a bit of stress is not necessarily a bad thing, research has proven that constant stress can quickly lead to professionals making more mistakes – and in a medical environment this can be disastrous.

As well as making more mistakes during

actual treatment, research suggests that patients who are treated by stressed professionals are more likely to experience adverse effects that are unrelated to their reason for visiting in the first place. In dentistry this could easily mean that an overburdened dental nurse may forget to properly decontaminate an instrument, or someone may forget to wear gloves – both perfect examples of ways that a small mistake can easily lead to infection being spread.

Not an isolated incident

This sort of malpractice doesn't sound like something that could happen easily, but just a quick Google search will reveal numerous examples of dentists and dental team members being caught breaking infection control protocols, failing to meet the expected standards and putting patients at risk.

One of the more famous recent examples was that of Mark Roberts – a dentist who in 2017 was found to routinely break infection control regulations by reusing equipment that should have been disposed after use, including syringes, anaesthetic cartridges and endodontic files. Whilst this is an extreme case, an older news article from 2012 reveals that according to data gathered by the Care Quality Commission, almost 10

per cent of UK practices at that time were in violation of Department of Health guidelines on how to properly disinfect instruments after use.

Breaches included autoclaves that were not clean, overflowing bins and staff being unable to tell which items were single use or multi use, all of which could lead to patients and staff alike becoming infected from certain pathogens. Perhaps what is most startling is that when asked about some of these failures, a common response was that staff were too stretched in their duties and busy to ensure that decontamination had been properly achieved. This only goes to show that stressful working conditions are a core reason why breaches happen, reiterating the importance of streamlining workflows so there is less chance of mistakes occurring.

A technical revolution

Technology in the dental market has progressed leaps and bounds in the last few years. With more and more systems becoming digital and advances in technology continuing to push the capabilities of decontamination equipment such as autoclaves, it's easy to streamline certain procedures and remain compliant so that your staff can reduce their stress levels and concentrate on providing exceptional care.

The new Little Sister SES 2020N autoclave from Eschmann is a particularly good choice for those looking to make their infection control workflows more efficient. Featuring a large, 17-litre capacity chamber, the autoclave can accommodate five full instrument trays, meaning it has to be run less regularly in order to effectively keep your instruments infection free. Furthermore, the Little



Sister SES 2020N is built to meet all of the latest EN 13060 standards and has a feature that allows you to automate your validation tests, helping you to remain compliant with minimal fuss.

Concentrate on care

The stresses and strains of the modern dental practice can feel overwhelming, but that doesn't mean that it's excusable for standards to slip. By investing in equipment that helps to streamline decontamination processes you can ensure that your patients will remain safe whilst also freeing up time to give them the quality care they deserve.

For more information on the highly effective and affordable range of decontamination equipment and products from Eschmann, please visit the website at www.eschmann.co.uk or call 01903 753322. ■

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