



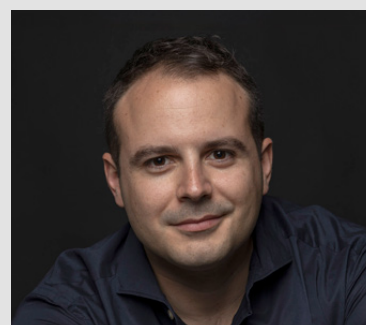
Bulk flow for Snowplow

Dr. Vincenzo Tosco

Bulk-fill composites (BFCs) are increasingly employed resin-based materials for posterior tooth restoration. Their innovative chemical monomers and fillers enhance translucency, facilitating an optimal degree of conversion even at the cavity base, where achieving a high degree of conversion is challenging. Literature suggests that new flowable BFCs should serve as liners in deep cavities, particularly in extensive class I and class II restorations, followed by a high-viscosity composite cover layer. Studies indicate that flowable liners improve the marginal adaptation of composite restorations and significantly reduce microleakage compared to the incremental layering technique. They can help achieve perfect cervical margin adaptation and fill all internal cavity undercuts. Moreover, the “snowplow technique,” which involves applying a thin layer of non-light-cured flowable liner before the packable composite increment, mitigates shrinkage stress. This clinical case demonstrates the potential of these new materials to simplify class II restorations in a predictable way.



About Dr. Vincenzo Tosco



Dr. Tosco graduated in Dentistry from the Universidad Alfonso X el Sabio, Madrid, Spain. He obtained his PhD in Biomedical Sciences from the Polytechnic University of Marche, Ancona, Italy. He is currently a research fellow at the same University, working under the supervision of Prof. Angelo Putignano and Prof. Giovanna Orsini. He carries out his activity mainly dedicating to Endodontics, Restorative and Aesthetic Dentistry. Author and co-author of over 29 scientific articles in peer-reviewed journals. Speaker at national and international conferences in Endodontics, Restorative Dentistry and Dental Materials.



Fig.1 The initial situation revealed an interproximal lesion in the first upper premolar.



Fig.2 After the application of the rubber dam, the distal carious lesion became evident due to the retraction of the papilla by the rubber dam.

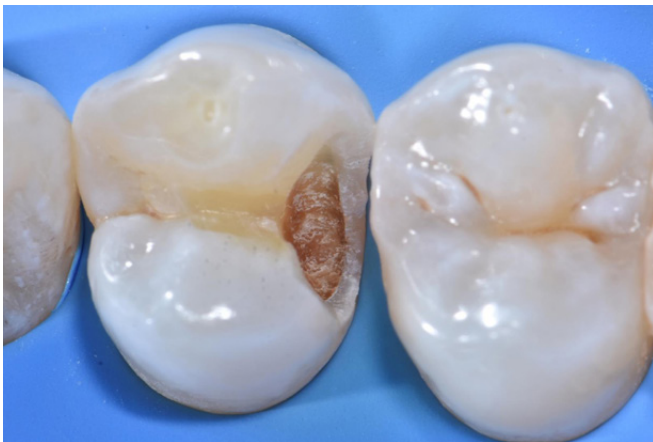


Fig.3 Starting with caries removal, a class II cavity preparation was performed.

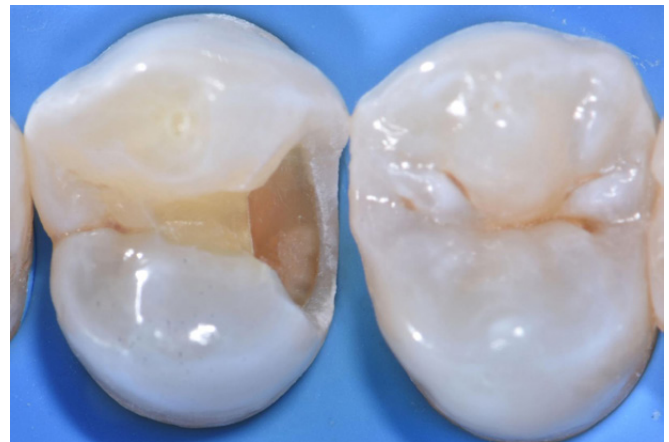


Fig.4 Final appearance after complete removal of dental caries.



Fig.5 The sectional matrix was fixed with plastic wedge and ring. For better adaptation of the matrix to the dental interproximal margin, teflon was inserted.

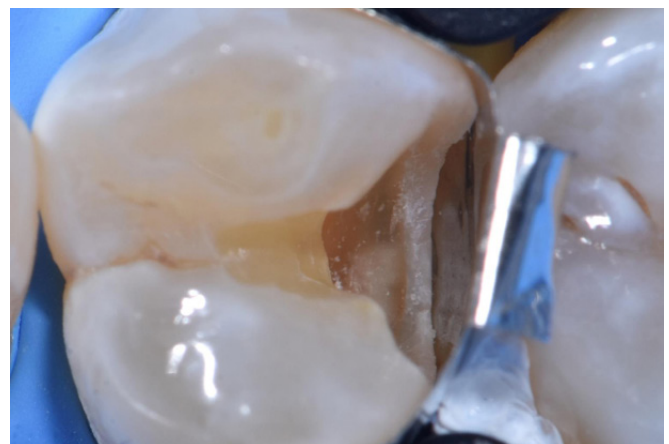


Fig.6 It's noteworthy to check the correct adaptation of the matrix on the class II box to obtain a proper contact point and an optimal interproximal shape. After ensuring this, the Snowplow technique was applied.

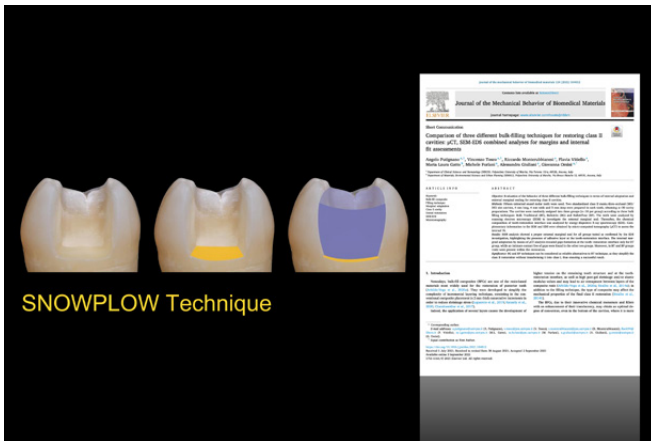


Fig. 7 As described in the literature, the snowplow technique involves the use of a thin layer of non-light-cured flowable liner placed before applying the increment of the packable composite. Upon dispensing the packable composite, the uncured flowable material further disperses into a very thin layer. The two materials are simultaneously polymerized with a single application of the curing light.

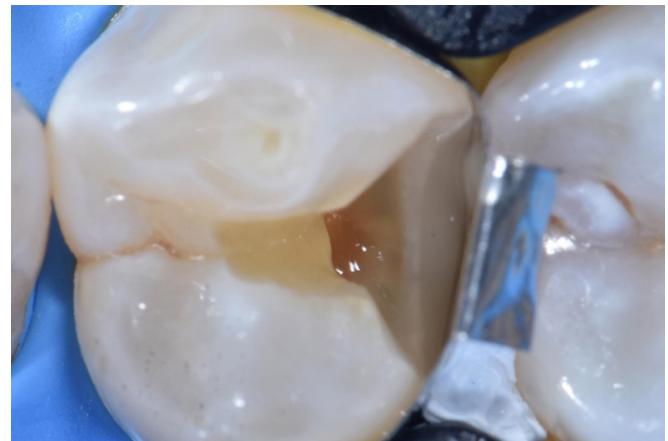


Fig.8 After completing the adhesive procedure, a thin layer of flowable bulk-fill composite (SimpliShade Bulk Fill Flow by Kerr) was applied to the bottom of the cavity..

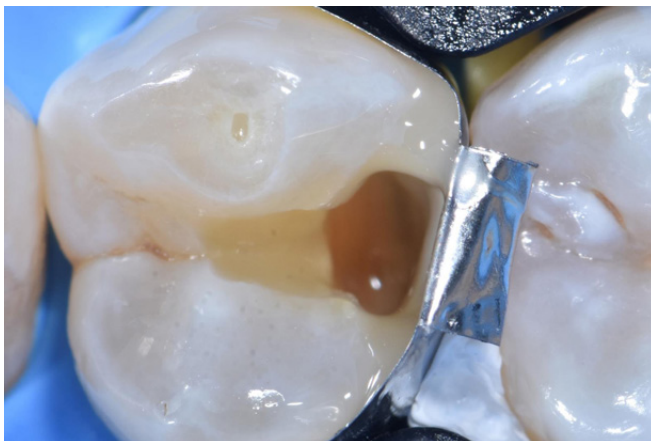


Fig. 9 Immediately thereafter, a packable bulk-fill composite (SimpliShade Bulk Fill composite by Kerr) was applied to reconstruct the interproximal wall. The composite was accurately condensed into the cavity, ensuring that if the flowable composite sealed all the undercuts, there would be no space rising coronally.

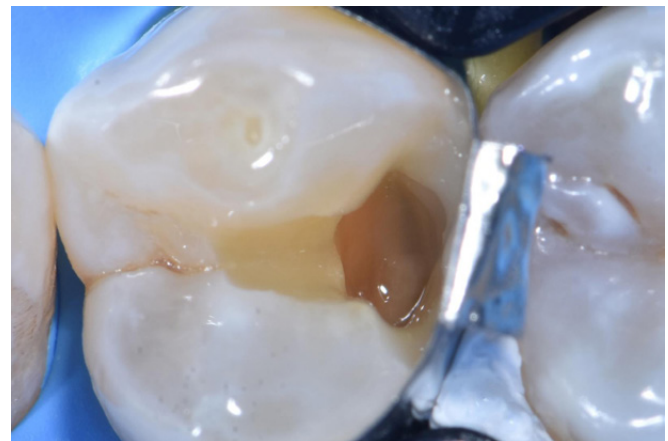


Fig. 10 Therefore, any excess flowable material could then be eliminated, leaving only the packable composite on the surface.

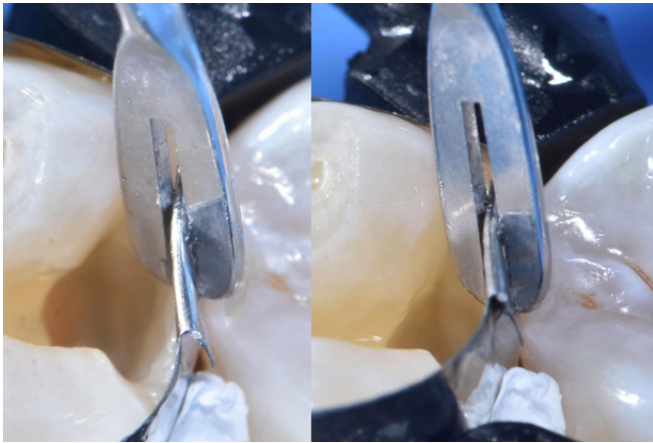


Fig. 11 The LM Posterior Misura instrument enables the precise measurement and modeling of the composite wall to replicate the height and anatomy of the neighboring tooth, even in the presence of a matrix. Consequently, excess material was easily eliminated using half of the fork, while the second part controlled the height of the restoration.

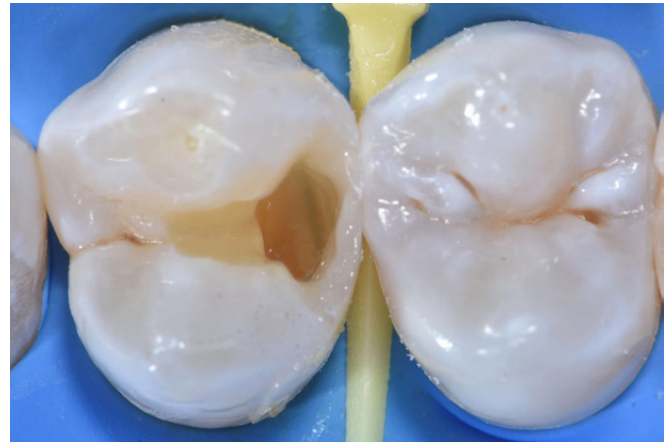


Fig.12 Class II was transformed into Class I.



Fig.13 From a lateral point of view, the interproximal walls were at the same level with the same orientation.



Fig. 14 The cavity was filled by applying only one single mass of the same bulk-fill composite used for the interproximal wall. Subsequently, characterizations were applied to complete the restoration.

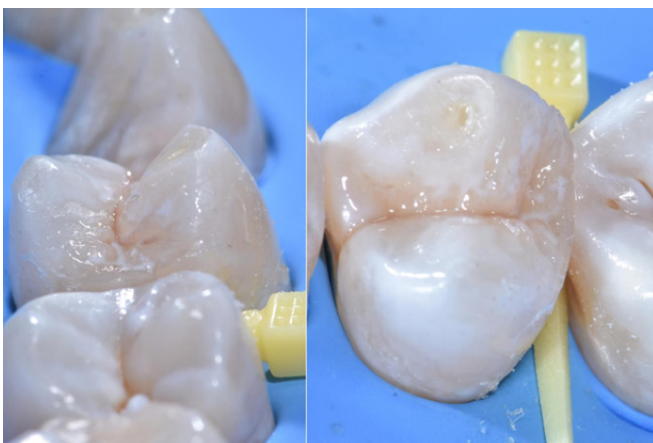


Fig. 15 Final aspect from different points of view.



Fig. 16 A proper contact point was established, along with the correct ridge inclination.



Fig. 17 Final aspect of the restoration after finishing and polishing procedures.



Fig.18 During a second visit, the second premolar was treated due to the presence of a carious lesion on the distal interproximal area. Before beginning the procedure, the occlusion was checked to visualize the contact points.

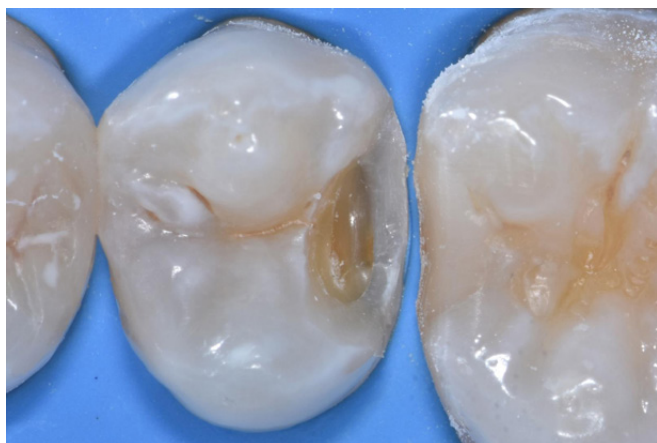


Fig. 19 A small class II cavity was obtained after cleaning the decayed tissue.



Fig. 20 To restore the cavity, a sectional matrix was placed and properly fixed to the cavity with a plastic wedge and separator ring. Due to the small size of the cavity, the Snowplow technique was employed to finish the restoration, ensuring complete cavity filling and treating it as if it were a class I cavity.

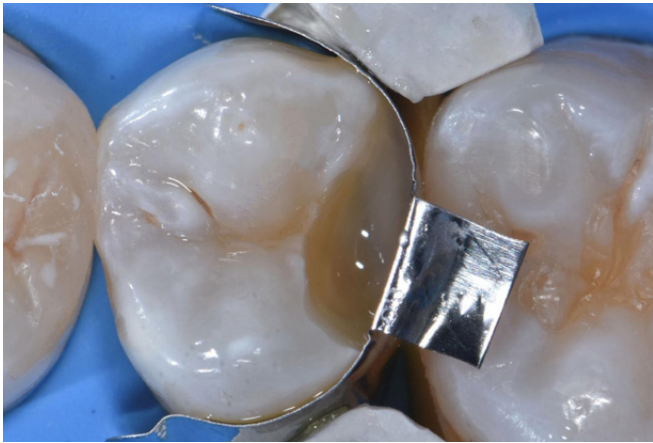


Fig. 21 Therefore, once again, a thin layer of flowable bulk-fill composite (SimpliShade Bulk Fill Flow by Kerr) was applied to the bottom of the cavity.

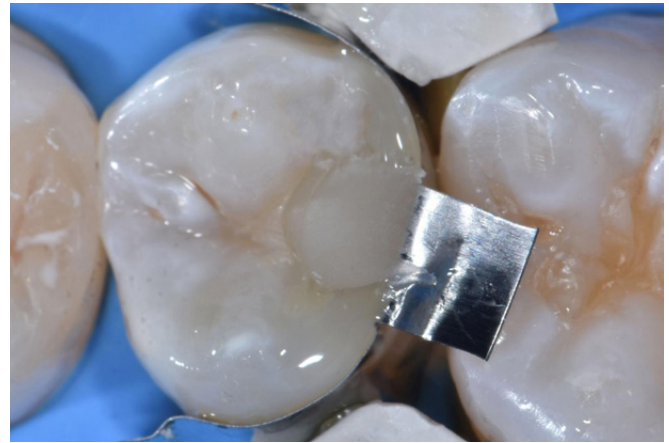


Fig. 22 A single mass of packable composite material was used to completely fill the cavity. Once again, the packable material distributed the flowable composite over the undercuts, effectively sealing the entire class II box. Excess flowable material rose to the coronal margin.

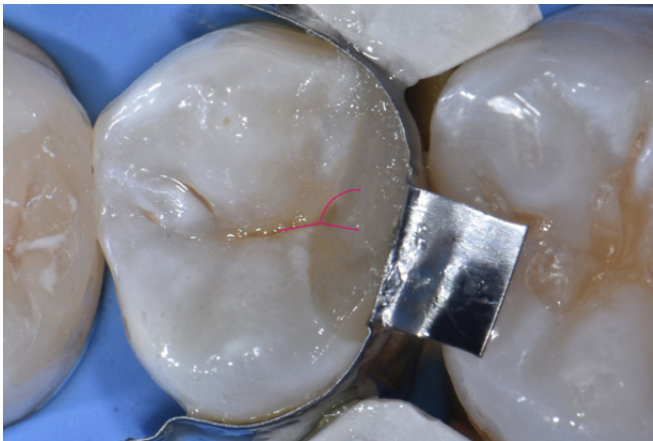


Fig. 23 After removal of the composite excess, the Essential lines were drawn to complete and finalize the restoration.



Fig. 24 Final aspect of the restorations after finishing and polishing procedures. Both premolars were treated by restoring function and aesthetics.

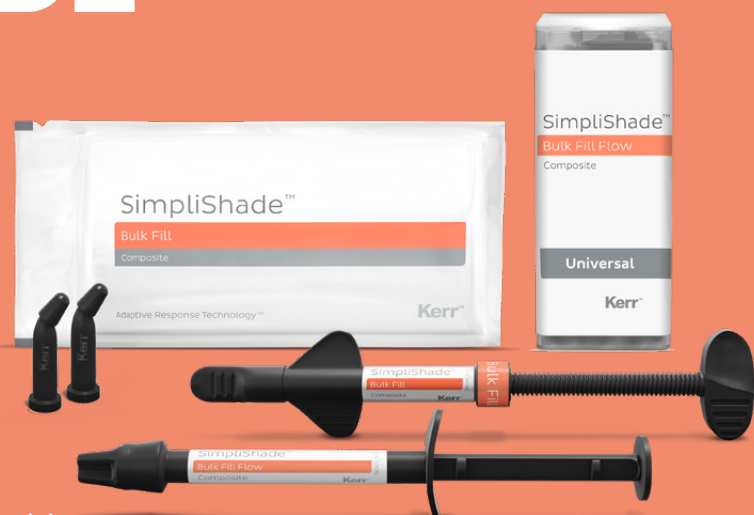
Conclusion

In conclusion, leveraging the superior characteristics of BFCs, various techniques were employed for restoring class II cavity preparations with these materials, aiming to facilitate placement for optimal clinical outcomes. Additionally, the snowplow technique enables better adaptation to the gingival wall, thereby reducing the risk of secondary caries.

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Disclosure: Dr. Vincenzo Tosco is a consultant for Kerr. The opinions and technique expressed in this article are based on the experience of Dr. Vincenzo Tosco. Kerr is a medical device manufacturer and does not dispense medical advice. Clinicians should use their own professional judgment in treating their patients.