

Direct stratification composite veneers

By Dr Jordi Manauta, Italy

Introduction

In the past, the most frequent concerns related to dentistry were healthy teeth and an attractive smile. The demand for aesthetic and conservative dentistry has increased signifi-

cantly in the last decade owing to patient desires. Nowadays, aesthetics matters—perfect smiles are a must, and it has been proved that they influence the patient's self-esteem and psychosocial well-being.¹

Based on scientific statistics and clinical data, direct stratification composite veneers offer a valid solution for aesthetic rehabilitation in the anterior region. Less expensive than a traditional

ceramic solution, direct stratification composite veneers can be performed in a single treatment session and can be modified during the stratification process to meet the patient's needs.

Additionally, the evolution of standard and nano-filled composites has led to improved mechanical properties and wear resistance.^{2,3} A recent meta-analysis of prospective studies on anterior composite restorations showed a median overall estimated survival rate of 84.6% after five years of clinical service.³

Most common complications related to direct stratification composite veneers are fracturing, caries, staining, colour deterioration and change in surface roughness.^{3,4,5,6,7} However, the easy repair properties of composite materials may solve these complications. Furthermore, direct restorations do not need enamel roughening, as etching with phosphoric acid is enough to improve bond strength.

Technique

Direct stratification composite veneers entail the direct application of one or more layers of composite resin directly to the tooth structure. The composite is then sculpted to the desired colour and shape, allowing aesthetic restoration to be generally accomplished in a single appointment.⁸

Different tools can be used to restore the correct shape and the emergence profiles of anterior teeth. Previously, the most common procedure for restoration using direct stratification composite veneers entailed the restoration of interproximal and cervical margins in two different steps, using two posterior matrices for the interproximal margins and a matrix band cut to a specific shape for the restoration of the cervical area, respectively.


In the case we report on in this article, we opted for the new Unica anterior matrix from Polydentia, as it simplifies the procedure, allowing the dentist to directly restore the emergence profile and cervical and interproximal margins in a single step. Employing this new matrix, the tooth's surfaces are first prepared and cleaned to accommodate the composite veneer. The matrix is then positioned on the teeth and fixed in place. Usually, plastic or wooden wedges can be used to ensure a proper fixing of the matrix. As an alternative, for example in the case of wide Class III restorations where the wedge placement could compromise the interproximal profile by collapsing the matrix into the cavity, a liquid dam (e.g. myCustom Resin, Polydentia) can be used to hold the matrix in place.

Composite stratification is then performed. First of all, the emergence profile is restored followed by modelling of the palatal walls. A rough tooth morphology is then reconstructed with the application of one or more layers of composite and sculptured with one or more layers of composite. The final shape of the tooth is then contoured using burs, abrasive discs and polishing appliances.

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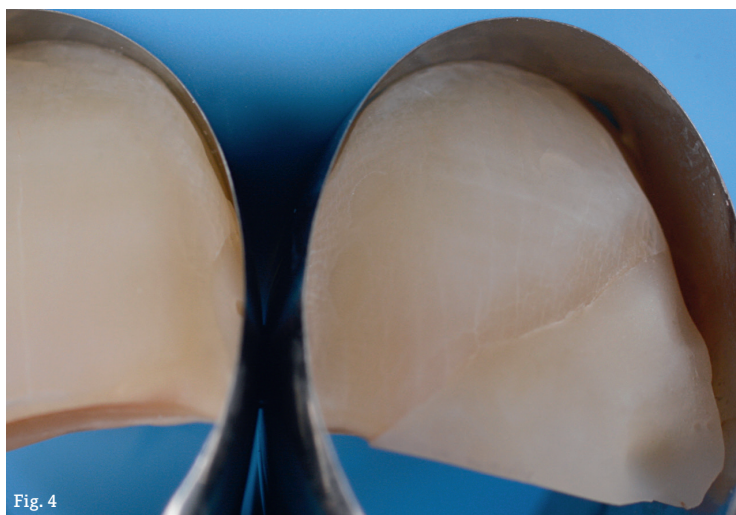
^ Fig. 1: The initial clinical situation showing the maxillary anterior teeth with unsatisfactory anatomy and the fractured tooth #11. We decided to proceed with a comprehensive aesthetic rehabilitation of the anterior teeth through direct stratification composite veneers. Fig. 2: The isolated field after cleaning, disinfection and polishing of the tooth surfaces. Different methodologies can be used to restore the emergence profiles of anterior teeth. We used the Unica anterior matrix. Fig. 3: Unica anterior matrices placed on central incisors. In this case, the intrinsic rigidity of the steel matrices and the presence of intact contact points ensured good stability and fixed the matrices without the need for wedges and resin. In addition, the convex shape of the matrices makes it possible to position the rubber dam more effectively in the cervical area, guaranteeing better isolation of the operating field.

Case report

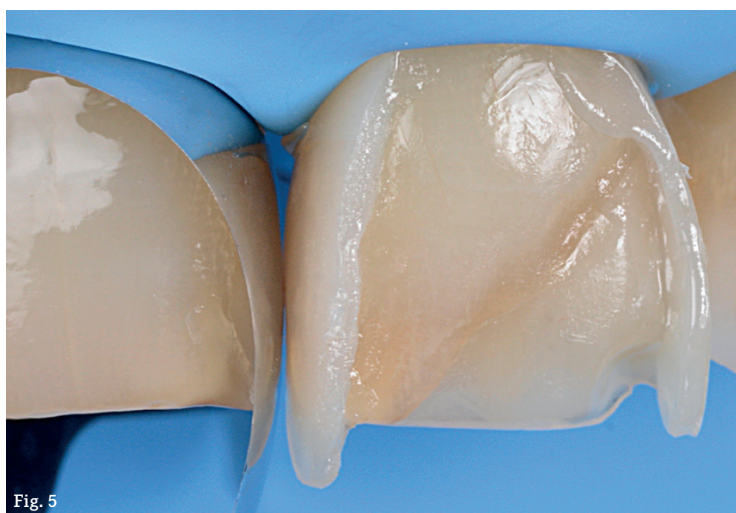
The patient, a 52-year-old woman, came to our attention dissatisfied with her smile. She presented with maxillary anterior teeth with an inadequate anatomy and a fracture of tooth #11. The clinical examination revealed caries-free teeth and satisfactory oral hygiene. After the anamnesis and clinical exam-

ination, we decided to proceed with four direct composite veneers on all central and lateral incisors using a fully adhesive and additive technique with minimal preparation.

The following images of this case illustrate the direct composite veneering procedure using the new Unica anterior matrix.



^ Fig. 4: A view of the central incisors highlighting the surface preparation.



^ Fig. 5: The clinical situation after build-up of the proximal walls of tooth #21. First, a universal system adhesive was used to increase the bond strength to the enamel before proceeding with the direct stratification of both the mesial and distal proximal walls using enamel composite. The same procedure was then repeated on the second central incisor.

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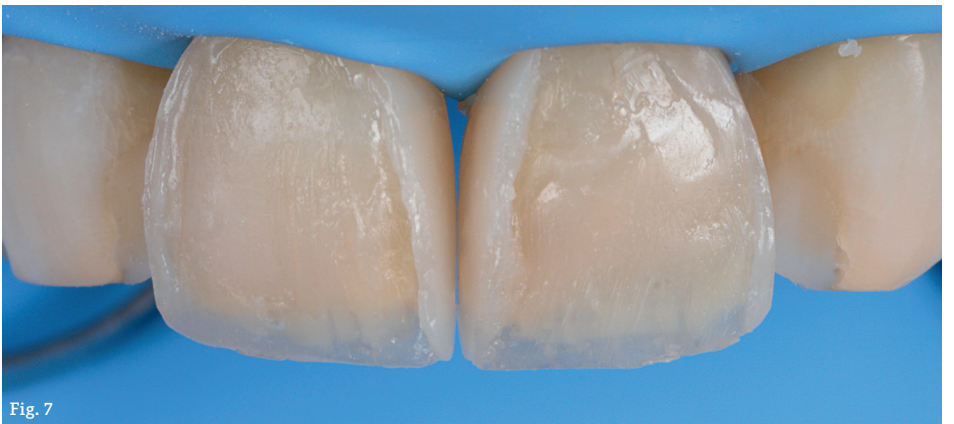
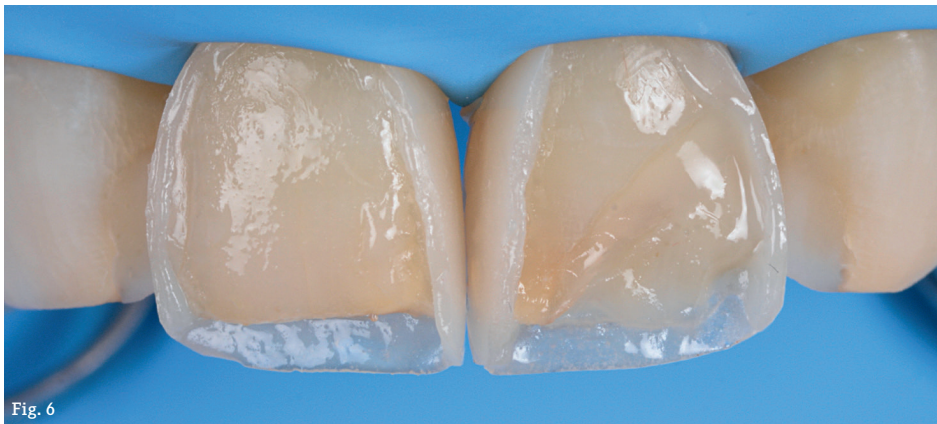


Fig. 6

Fig. 7

Fig. 8

Fig. 9

^ Fig. 6: After build-up of the proximal walls, the palatal walls were modelled in order to imitate the angulation of the tooth, using a small amount of enamel composite placed on the finger. The enamel composite was then pressed on to the palatal surface and the previously modelled proximal guides and light-cured. Fig. 7: Composite veneer stratification: first, a layer of dentine was placed. Fig. 8: A second layer of enamel was placed to mimic the shades of the tooth and modelled to the final shape using a spatula and brushes. The image shows the composite veneers on the central incisors before contouring and prefinishing and then reconstructing the next tooth. Fig. 9: After contouring the central incisors using the same methodology described before, we proceeded with the direct stratification of the composite veneers on the lateral incisors.

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Fig. 10

^ Fig. 10: Emergence profile build-up on tooth #22. Once the material had been photopolymerised, the matrix was separated and pulled off for a better view.



Fig. 11

^ Fig. 11: The image shows the composite veneers on teeth #12 and 22 before proceeding with the contouring, finishing and polishing. The contouring and finishing were performed with a low-speed diamond bur. The low speed allows the dentist to achieve better control of the movement and improve the surface smoothness, even in the case of a coarse grit size. Pre-polishing was then performed using a brown spiral wheel (3M) and polishing paste (Diamond Twist SCL, Premier Dental). Extra-gloss finishing can be achieved using a buff wheel.

Conclusion

Thanks to the evolution of composite materials, direct stratification composite veneers are nowadays a valid, quick and less expensive solution for aesthetic rehabilitation in the anterior region. Successful aesthetic and functional results are nevertheless strongly dependent on the operator's understanding of adhesive processes and his or her sculpting ability.

Different tools and procedures can help the clinician to properly restore the emergence profile. Among these, the new Unica anterior matrix stands out because of its simplicity and versatility, allowing the dentist to quickly and easily restore both cervical and interproximal profiles at the same time, greatly reducing the chair time and bringing aesthetic restorations within everyone's reach.

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Fig. 12



Fig. 13



Fig. 14



Fig. 15

^ Fig. 12: The immediate outcome after rubber dam removal. Fig. 13: The clinical situation after final polishing and texturisation of the restoration. This image was taken at the 30-day check-up after the restoration. Fig. 14: The clinical situation after final polishing and texturisation of the restoration. This image was taken at the 30-day check-up after the restoration. Fig. 15: Clinical situation three months after the restoration.

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About the author

Dr Jordi Manauta was born in Mexico City in Mexico, where he graduated cum laude in dentistry from the Universidad Tecnológica de México and was apprenticed to Dr Miguel Angel Tamés (Mexico) and Dr Walter Devoto (Italy). Manauta continued his studies with a master's degree in operative and aesthetic dentistry at the Universitat Internacional de Catalunya in Barcelona in Spain. He is a visiting lecturer at the Siena and Seville universities in Italy and Spain, respectively. He has developed various materials and instruments for aesthetic dentistry and photography in collaboration with international companies. Dr Manauta is the author of the book *Layers: An Atlas of Composite Resin Stratification* (Quintessence, 2012). He is a scientific consultant for two European journals, and author and co-author of many publications in international journals

and is frequently invited to lecture on these topics. Manauta runs a private practice.

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Editorial note: A complete list of references can be obtained from the publisher.



^ Dr Jordi Manauta, Mexico.



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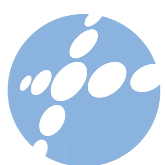
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