

# Utilizing Innovative Matrix Systems to Achieve Predictable Anterior Direct Composite Restorations

by Dory Stutman, DDS



## Learning Objectives

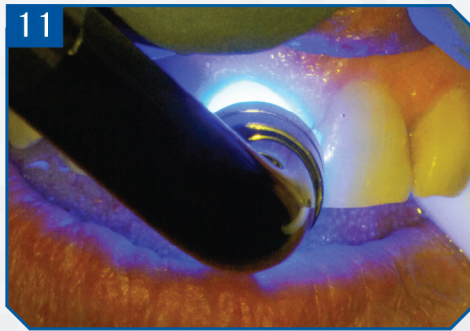
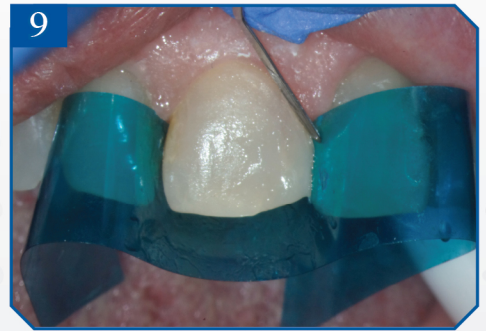
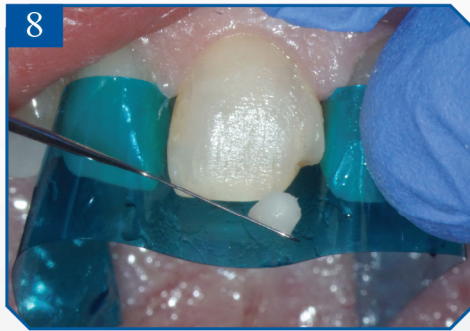
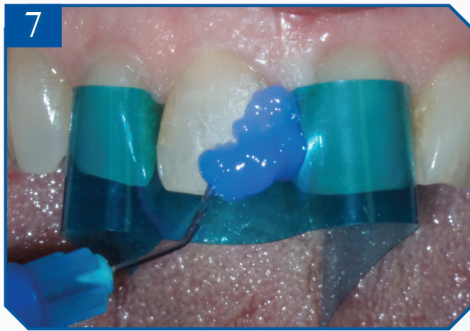
**After reading this article, the reader should be able to:**

- Explain some of the challenges involved with placing direct anterior composite restorations
- Describe the necessary characteristics of anterior composite restorations that require specific composite placement, isolation, and finishing protocol
- Discuss the capabilities and indications of different matrix systems for direct anterior composite restorations

**D**irect anterior composite restorations inherently demand precise placement of appropriately shaded composites, attention to anatomical characteristics, and thorough refinement of the embrasures, incisal edges, emergence profile, gingival margins, and proximal contacts.<sup>1</sup> Whether to repair wear, caries, chips or fractures, or to enhance tooth shape, size and color for esthetic reasons, direct anterior composite restorations can present clinicians with various technique-related challenges based on the clinical situation at hand.

Some of these challenges have involved the handling characteristics of direct composites and the manner in which those characteristics affect application time,<sup>2</sup> as well as polishing and finishing.<sup>3</sup> Research has found no association between handling characteristics of evaluated composites and speed of placement, although some tested composites were less problematic during the application process.<sup>2</sup>

Additionally, technique sensitivity surrounding complex layering techniques—which are essential for creating direct restorations that demonstrate natural-looking opalescence and fluorescence—also presents placement difficulties, particularly in terms of selecting the correct colored composites.<sup>4</sup> Even when the process is simplified by using today's composites that are designed for stratification and/or which create a mimetic appearance with fewer layers, less complex protocol

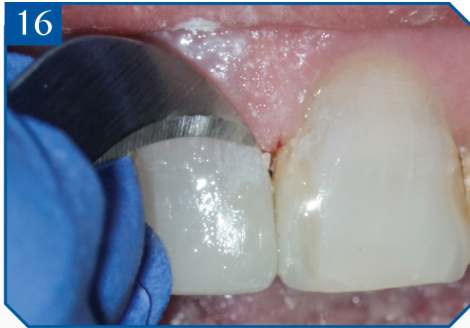
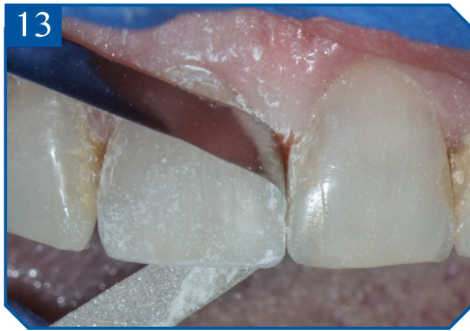


are still desired.<sup>5</sup> However, incremental composite placement has been shown to significantly reduce microleakage at the coronal and apical margins of Class V direct composite restorations,<sup>6</sup> but placement technique does not necessarily influence marginal adaptation in conservative Class V lesions.

Class V restorations have traditionally been less durable than other direct composite restorations. Reasons for this include loss of retention, marginal excess, and secondary caries as a result of challenges with isolation, placement, contouring, and finishing/polishing.<sup>7</sup> To ensure moisture control and isolation, which are essential

for successfully placing Class V direct composite restorations, cervical matrices have been used to ensure the ideal field on which to place the composite (i.e., gingival retraction, moisture control, etc.).<sup>8</sup>

Matrices have also been used to ensure proper contact formation and reduce voids in anterior di-



rect composite restorations, as well as make the placement procedure more efficient. Dentists have used such matrices as Teflon tape, pull-through, and clear matrices, among others.<sup>9</sup> In a comparison of these three matrix types, the clear matrix was shown to require the least amount of time for diastema closure.<sup>9</sup>

Of course, the ultimate goal of diastema closure is creation of appropriate interproximal contacts, an esthetic emergence profile, and harmony with the interdental papilla at the contact area.<sup>10</sup> Unfortunately, some matrix systems require the use of wedges to accommodate the thickness of an interdental ma-

trix, ultimately resulting in compromises to the emergence profile, such as black triangles under the interdental contact.<sup>10</sup>

Whether when closing a diastema or treating a Class III lesion, of paramount importance to achieving a durable and esthetic anterior composite restoration is under-

standing the issues of tightness, anatomy, and which matrices and techniques will contribute to the anticipated result.<sup>11</sup> Although direct composite restorations are an economical and successful alternative to indirect ceramic restorations in appropriate cases, advanced armamentarium are still required to facilitate ease and predictability of composite placement, as well as maximize efficiency and productivity.<sup>12</sup>

## Matrix Solutions for Anterior Restorations

For Class V restorations, the Blue View Cervical Matrix (Garrison Dental) contours and directly compresses composite while eliminating the oxygen-inhibited layer. For large Class III or Class IV restorations, as well as small to medium sized restorations, VariStrip Contoured Anterior Matrices (Garrison Dental) are available pre-contoured in three dimensions, and tapered to provide the ideal band height and contour. Blue View Grip Strip (Garrison Dental)—with an interproximal gripper and curved form to help retain the matrix, and Blue View Matrix Tape (Garrison Dental)—with coloration that improves visualization of the matrix and preparation margins, can also be used for large Class III and Class IV restorations, as well as small to medium sized restorations.<sup>13</sup>

For Class V restorations, the Blue View Transparent Cervical Matrices with gingival retractor help to protect direct composite restorations from contamination, elimi-

nate the time spent hand sculpting, and reduce finishing time. Additionally, the 7 available sizes of the anatomical and flexible cervical matrices adapt to individual tooth shapes for improved contours, while the thin edges allow excess composite to flow out for improved form and contour.<sup>13</sup>

When placing Class V restorations, the Blue View Transparent Cervical Matrices eliminate the oxygen-inhibited layer and can be used to directly compact the composite into the preparation. The blue tint provides contrast between the matrix and tooth structure, yet does not compromise composite polymerization.<sup>13</sup>

The Blue View VariStrip™ is a uniquely contoured anterior matrix that provides the ideal curvature and band height for virtually every anterior restoration. The 0.0020" thin plastic anatomical strip is tapered from one end to the other, so it can be placed interproximally and then slid until it perfectly matches the tooth height. The pre-contouring enables clinicians to easily recreate the occluso-gingival anatomy, avoiding flat embrasures, while the blue tint provides the necessary contrast between the matrix and tooth structure, without compromising composite polymerization.<sup>13</sup>

## Class V Restoration Technique

The white gingival retractor is used to provide access and isolation when Class V restorations will

be very close to the gingival margin, or even slightly sub-gingival. After tooth preparation, cleaning, and preferred adhesive bonding protocol, a rubber dam is placed, and the appropriate sized Blue View Transparent Cervical Matrix is selected based on the tooth being restored. The matrix stem is snapped into the placement instrument, which is designed to hold the matrix in either a perpendicular position or an inline position, providing the most convenient application angle.

The clinician can then place their preferred restorative materials according to the manufacturer's instructions, after which the Blue View Transparent Cervical Matrix is used to compress and subsequently shape the final composite increment.

To accomplish this, the cervical edge of the matrix is placed against the tooth first. While pressing the matrix firmly against the tooth, it is rolled onto the tooth, which allows excess material to express from the occlusal edge of the matrix, rather than sub-gingivally. This greatly simplifies the clean-up process.

The matrix is kept pressed against the restoration while light curing, which eliminates the oxygen inhibiting layer. The presence of an oxygen-inhibited layer may impact the clinical performance of composites and, therefore, the longevity of the anterior direct restoration.<sup>14</sup> After polymerization and removal of the cervical matrix, minimal finishing and polishing is performed to complete the restoration.

## Class III and Class IV Technique

Any procedure for which a traditional Mylar strip has been used can now be completed with Blue View VariStrips. Following tooth preparation and cleaning, a rubber dam is placed.

The Blue View VariStrip is placed interproximally and slid until the tooth height is perfectly matched. After the preferred adhesive bonding protocol is completed, the desired composite is placed on the tooth preparation. The occluso-gingival anatomy is then recreated by the pre-contouring of the strip, which helps to avoid flat embrasures. Once contoured, the restoration is light-cured through the strip.

## Conclusion

This article has summarized some of the challenges inherent with anterior direct composite restoration placement. Some of these necessitate specific clinical technique considerations, include composite placement, isolation, and finishing protocol. Matrix systems for direct anterior composite restorations can facilitate predictable placement and creation of durable and esthetic proximal contacts, embrasures, and restoration margins. The ma-

trix systems described and demonstrated in the is article—Blue View Cervical Matrix and VariStrip Contoured Anterior Matrices, along with Blue View Grip Strip and Blue View Matrix Tape—enable clinicians to properly contour anterior composite restorations in efficient, easy-to-use ways. ♦

---

*Dory Stutman, DDS - A graduate of Case Western Reserve University School of Graduate Dentistry, Dr. Dory Stutman completed his general practice residency at Metrohealth Medical Center in Cleveland, Ohio. He completed a postgraduate program in Esthetic Dentistry at the University of Buffalo. He practices in Massapequa, NY, focusing on cosmetic dentistry, dental implants, and full mouth reconstruction. His interest in art and sculpture is emphasized in his passion to create truly esthetic smiles for his patients. An accredited member of the American Academy of Cosmetic Dentistry, Dr. Stutman also works as a clinical consultant for The Dental Advisor.*

## References

1. Lacy AM. Application of composite resin for single-appointment anterior and posterior diastema closure. *Pract Periodontics Aesthet Dent.* 1998 Apr; 10(3):279-86.
2. Roulet JF, Geraldeli S, Sensi L, Ozcan M. Relation between handling characteristics and application time of four photopolymerized resin composites. *Clin J Dent Res.* 20013; 16(1):55-61.
3. Blank JT. Case selection criteria and a sim-

plified technique for placing and finishing direct composite veneers. *Compend Contin Educ Dent.* 2002 Sep; 23(9 Suppl 1):10-7.

4. Devoto W, Saracinelli M, Manuata J. Composite in everyday practice: how to choose the right materials and simplify application techniques in the anterior teeth. *Eur J Esthet Dent.* 2010 Spring; 5(1):102-24.
5. Blank JT. Simplified techniques for the placement of stratified polychromatic anterior ad posterior direct composite restorations. *Compend Contin Educ Dent.* 2003 Feb; 24(2 Suppl):19-25.
6. Owens BM, Johnson WW. Effect of insertion technique and adhesive system on microleakage of Class V resin composite restorations. *J Adhes Dent.* 2005 Winter; 7(4):303-8.
7. Perez CR. Alternative technique for class V resin composite restorations with minimum finishing/polishing procedures. *Oper Dent.* 2010 May-June; 35(3):375-9.
8. Jefferies SR. Use of a visible light cured elastomeric resin to stabilize cervical matrix in restoration of Class V erosion lesion. *J Esthet Dent.* 1990 May-June; 2(3):79-81.
9. Kwon S, Oyoyo U, Li Y. Influence of application techniques on contact formation and voids in anterior resin composite restorations. *Oper Dent.* 2013 Jul 22. Epub ahead of print.
10. Lenhard M. Closing diastemas with resin composite restorations. *Eur J Esthet Dent.* 2008 Autumn; 3(3):258-68.
11. Keogh TP, Bertolotti RL. Creating tight, anatomically correct interproximal contacts. *Dent Clin North Am.* 2001 Jan; 45(1):83-102.
12. Margeas RC. Keys to success in creating esthetic class IV restorations. *J Esthet Restor Dent.* 2010 Feb; 22(1):66-71.
13. Garrison Dental Solutions. (2013). Information retrieved from <http://www.garrisonsdental.com>.
14. Shawkat ES, Shortall AC, Addison O, Palin WM. Oxygen inhibition and incremental layer bond strengths of resin composites. *Dent Mater.* 2009 Nov; 25(11):1338-46.

## CE CREDIT

All participants scoring at least 80% on the examination will receive a certificate verifying 1 CEU Credit. To take the test and receive credit, or request a sample please go to <http://cpsmagazine.com/dental-team-member/utilizing-innovative-matrix-systems-exam>