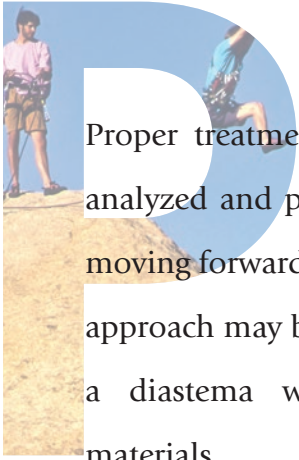
A photograph of two people rappelling down a large, light-colored rock formation. One person is standing on the left peak, and the other is in mid-air, jumping from the right peak. The background is a clear blue sky.

SIX STEPS TO CONSIDER WHEN CLOSING DIASTEMAS

Many clinicians are faced with the challenge of how to close a diastema esthetically, and without the presence of “black triangles.” Dr. Marcos Vargas, a professor at the University of Iowa College of Dentistry, believes freehand direct resins composites provide an esthetic and conservative approach for closing diastemas and should be a part of the armamentarium for every cosmetic dentist.

This article summarizes the technique demonstrated by the author, published in Volume 26, No. 3, Fall 2010 issue of the *Journal of Cosmetic Dentistry*.



Proper treatment options should always be carefully analyzed and presented to the patient in detail before moving forward with any treatment plan. The following approach may be an option and is best used for closing a diastema with non-slumping and non-sticking materials.

The case here describes the treatment plan performed on a 27-year-old female concerned with the space between her front teeth. She agreed to the following treatment after all options were investigated and presented to her.

“The presence of “black triangles” around the teeth can make it difficult for practitioners to close anterior diastemas.”

HERE ARE THE SIX STEPS TO CONSIDER WHEN USING THIS APPROACH:



Figure 1: The appropriate shade of direct composite is selected.

1.

Step 1: Shade and Opacity Selection
Tooth shade should be obtained by comparing the center middle-third of the tooth against the middle of the shade tab (Fig 1). An enamel-like opacity material is usually selected when closing diastemas up to 2 mm. Larger diastemas may require layering of a dentin-like opacity material to prevent show-through, followed by an enamel-like opacity material.

2.

Step 2: Isolation
Rubber dam isolation with ligatures is recommended. The rubber dam keeps the operatory field dry and free of contaminants. The ligatures help the rubber dam push the gingiva apically, to allow access to the proximal gingival areas for ideal contouring and polishing of the restorations.

3.

Step 3: Tooth Preparation

Although, tooth preparation is not required when closing a diastema there may be situations where the teeth are slightly misaligned (Fig 2) and a minor recontouring may be necessary when the teeth are positioned facially. On the other hand, no preparation is necessary when the teeth are lingually positioned. Roughening of the enamel is recommended only when self-etch adhesives are to be used. Following tooth preparation, the enamel surface of both teeth is etched for at least 30 seconds (Fig 3), after which the adhesive bonding agent is placed and cured (Fig 4).



Figure 2: The enamel surface of the teeth is minimally prepared for composite placement.

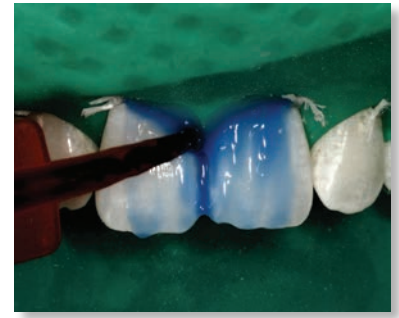


Figure 3: The enamel surface of teeth #8 and #9 is etched.



Figure 4: An adhesive bonding agent is applied to the preparations and light-cured.

4.

Step 4: Material Selection

Composite resin materials for this technique must demonstrate handling characteristics that enable placement without slumping or sticking to placement instruments. Few commercially available resin composites (e.g., Estelite Sigma, Tokuyama [Tokyo, Japan]; Filtek Supreme Ultra, 3M ESPE [St. Paul, MN]; Premise, Kerr [Orange, CA]; Renamel Microfill, Cosmedent [Chicago, IL]) demonstrate the handling characteristics for this particular diastema closure technique.

5.

Step 5: Material Placement

- A small increment of the appropriately shaded composite resin that corresponds to the facial half of each diastema is placed over the mesio-facial aspect of each tooth. These increments are placed simultaneously and contoured to ensure optimal contour and identical width for both central incisors (Fig 5). Attention should be given to blending the increments over the facial surface.
- Using a thin-bladed interproximal carver (IPC) instrument, contour the increments to match each other's profile and ensure adequate gingival embrasure and emergence profile (Fig 6).
- A metal matrix is sometimes utilized to produce a small separation between the two increments. A small brush is used to smooth the composite resin surface and approximate the increments (Fig 7). Light-cure the increments (Fig 8).



Figure 5: Two increments of nano-composite resin are applied to the diastema simultaneously and contoured to optimal proportion on the mesial aspect.



Figure 6: An IPC instrument is used to adapt the resin to the proper contour.



Figure 7: A small brush is used to smooth the composite.



Figure 8: These increments of composite are light-cured.

5. continued

- Place a matrix against one of the central incisors and layer the lingual half of the diastema between the tooth and the matrix. Push this increment facially, close the matrix against the tooth, and pull it through toward the facial to ensure proper lingual contour (Fig 9). If excess composite remains in the gingival embrasure, remove it prior to light-curing.
- Light-cure the direct resin buildup and repeat last bullet point above for the other central incisor.

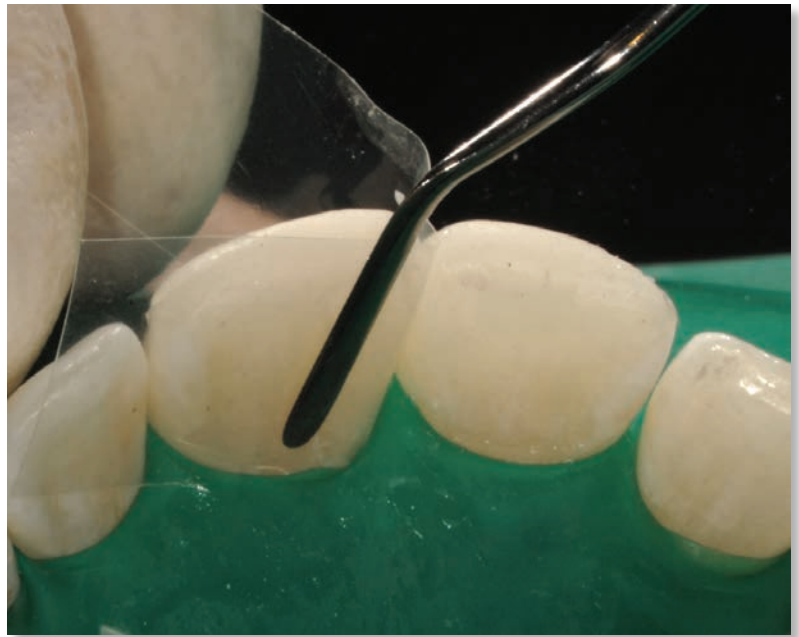


Figure 9: After the matrix is placed, the composite is layered against the matrix lingually and pulled through toward the facial.

6.

Step 6: Finishing and Polishing

Using a #12 blade, remove any excess material gingivally to the contact point. Sof-Lex disks (3M ESPE) and a coarse polishing cup were used to contour the facial surface of the restorations (Fig 10). Create surface characteristics with a diamond bur, without water irrigation (Fig 11). Proximal polishing was achieved by sequentially using polishing strips (Epitex strips, GC America; Alsip, IL). Polishing cups (HiLuster, Kerr) were used to create the restoration's final luster and surface anatomy (Fig 12). In this case, the patient was scheduled a week later to evaluate her satisfaction, gingival healing, and marginal adaptation.



Figure 10: The facial surface is finished using a finishing disk.



Figure 11: Surface characteristics are created with a diamond bur, without water irrigation.

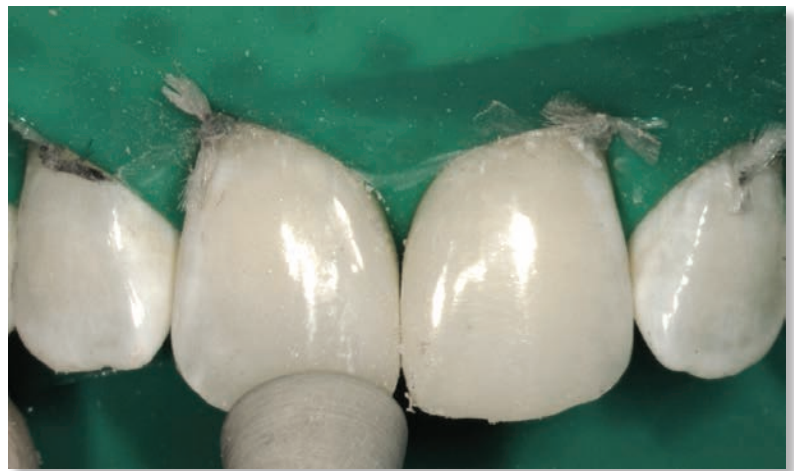


Figure 12: The use of polishing cups contributes to the creation of the restoration's final luster and surface anatomy.

Conclusion.

Conclusion

One of the biggest challenges practitioners face in esthetic dentistry is the presence of “black triangles” around the teeth when closing anterior diastemas.¹ However, this difficulty can be effectively managed. While the success of a restorative treatment in anterior teeth depends on the esthetic integration between soft and hard tissues, direct restorative techniques described here can be applied to avoid “black triangles” for an optimal result. (Fig 13).²

Resources

1. De Araujo EM Jr, Fortkamp S, Baratierra LN. Closure of diastema and gingival recontouring using direct adhesive restorations: a case report. *J Esthet Restor Dent.* 2009;21(4):229-40.
2. Lacy AM. Application of composite resin for single-appointment anterior and posterior diastema closure. *Pract Periodont Aesthet Dent.* 1998;10(3):279-86.



Figure 13: Postoperative view after the diastema between teeth #8 and #9 was closed with direct composite resin.

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