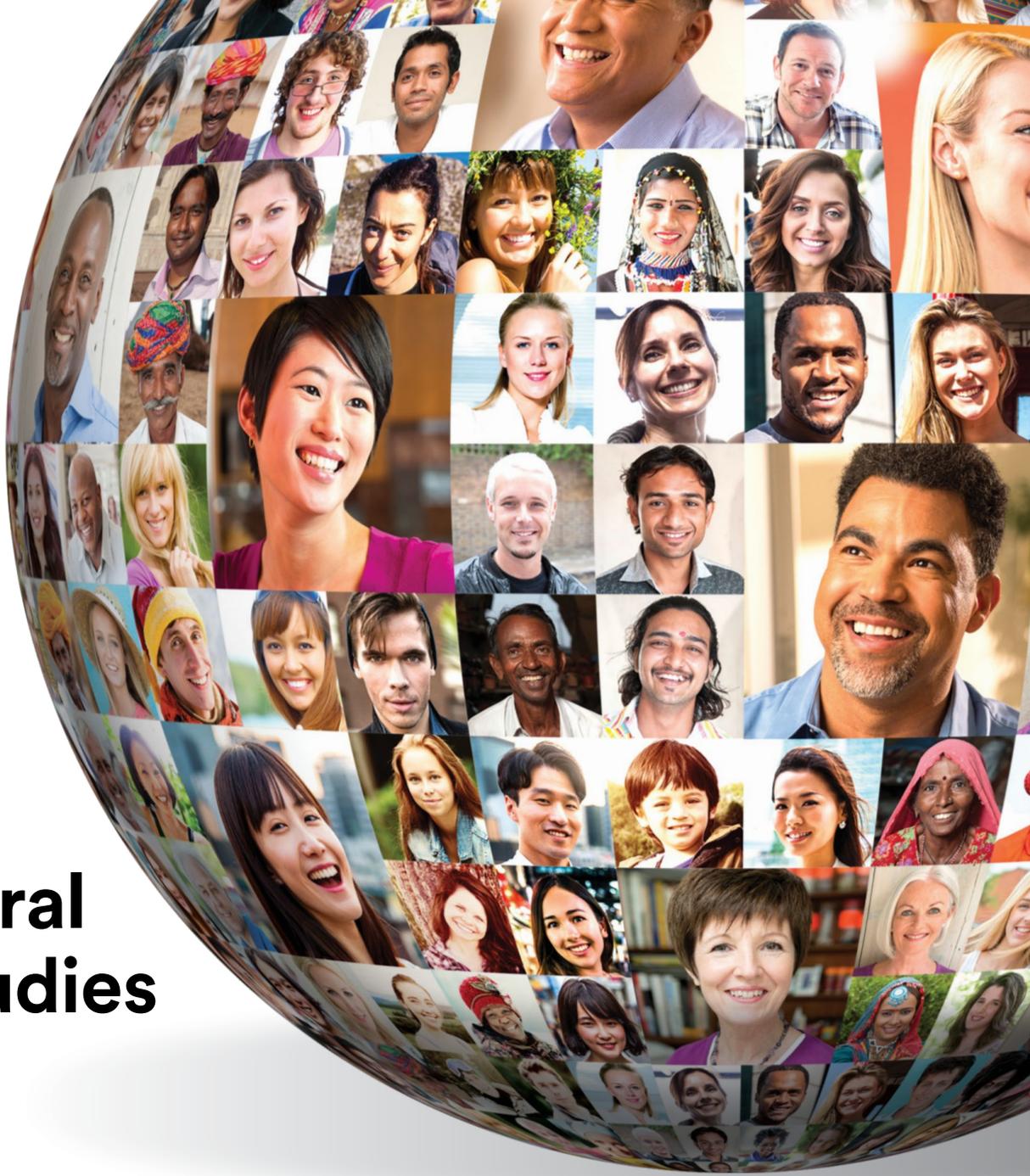




**Filtek™**  
Dental Restoratives



## Procedural Case Studies





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# Class I Composite Replacement

Clinical dentistry and photography by Dr. Giuseppe Chiodera  
Dr. Giuseppe Chiodera has received an honorarium from 3M Oral Care

## About the Case:

The mandibular second molar showed two insufficient fillings with secondary caries, open margins, and occlusal wear. The patient opted for an esthetic, multi-layer composite restoration for a natural looking outcome.

## Challenge:

Poor accessibility and visibility of the restoration led to a variety of clinical challenges including difficult composite placement and light curing.



**Fig. 1:** Initial situation: mandibular second molar with restorations require replacement.



**Fig. 2:** After placement of a rubber dam, the worn composites were removed.



**Fig. 3:** After selective enamel etching with 3M™ Scotchbond™ Universal Etchant, 3M™ Scotchbond™ Universal Adhesive was applied, scrubbed into the surface for 20 seconds and gently air dried for 5 seconds.



**Fig. 4:** The adhesive was light cured\* for 10 seconds with the 3M™ Elipar™ DeepCure-S LED Curing Light.



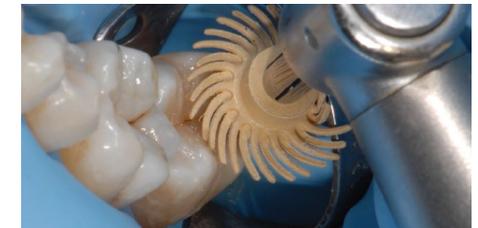
**Fig. 5:** 3M™ Filtek™ Supreme XTE Flowable Restorative, shade A3, was used as a liner for easy adaptation.



**Fig. 6:** Dentin was replaced with incremental placement and curing of 3M™ Filtek™ Supreme XTE Universal Restorative, shade A3B, and light cured\*.



**Fig. 7:** Enamel was replaced with 3M™ Filtek™ Supreme XTE Universal Restorative, shade A3E, and light cured\*. Stains were applied in the fissure.



**Fig. 8:** The initial finishing was completed with 3M™ Sof-Lex™ Contouring and Polishing Discs, followed by pre-polishing with 3M™ Sof-Lex™ Pre-Polishing Spiral.



**Fig. 9:** After pre-polishing was complete, the restoration was brought to a high gloss polish with Sof-Lex™ Diamond Polishing Spiral.



**Fig. 10:** Final restorations with an excellent esthetic appearance.

\* Light cured according to the manufacturer's guidelines

3M™ Filtek™ Supreme XTE Universal Restorative

# Class II Composite Replacement

Clinical dentistry and photography by Dr. Giuseppe Chiodera  
Dr. Giuseppe Chiodera has received an honorarium from 3M Oral Care

## About the Case:

The patient found it difficult to floss his right first molar due to an insufficient proximal contact resulting in gingival irritation and occasional bleeding.

## Challenge:

The goal was to achieve better anatomy and contour to allow for optimal flossing and improved occlusion.



**Fig. 1:** Food impaction was found in the mesial sulcus indicating inadequate contacts were achieved when the previous composite restoration was placed.



**Fig. 2:** Prepared tooth after removal of the old composite restoration.



**Fig. 3:** After a 15 second selective enamel etch with 3M™ Scotchbond™ Universal Etchant, 3M™ Scotchbond™ Universal Adhesive was applied and scrubbed into the surface for 20 seconds.



**Fig. 4:** After gently air drying for 5 seconds, the adhesive was light cured\* for 10 seconds using a 3M™ Elipar™ DeepCure-S LED Curing light.



**Fig. 5:** A sectional matrix was positioned. 3M™ Filtek™ Supreme XTE Flowable Restorative was placed on the cavity floor, and the proximal walls were created using 3M™ Filtek™ Supreme XTE Universal Restorative, shade A3 Enamel, and light cured\*.



**Fig. 6:** Incremental build-up of dentin layer with 3M™ Filtek™ Supreme XTE Universal Restorative, shade A3D, and light cured\*.



**Fig. 7:** Placement of final enamel layer with 3M™ Filtek™ Supreme XTE Universal Restorative, shade A3E, and light cured\*.



**Fig. 8:** Fissure characterization of the uncured composite using brown stain followed by light curing of the composite.



**Fig. 9:** Finishing of restoration using different grits of 3M™ Sof-Lex™ Contouring and Polishing Discs.



**Fig. 10:** The 3M™ Sof-Lex™ pre-polishing spiral was used to prepare the restoration for final polishing.



**Fig. 11:** A high gloss polish was achieved using the 3M™ Sof-Lex™ Diamond Polishing Spiral.



**Fig. 12:** The final natural looking restoration immediately after finishing and polishing.

\* Light cured according to the manufacturer's guidelines

3M™ Filtek™ Supreme XTE Universal Restorative

# Class IV Composite Replacement

Clinical dentistry and photography by Dr. Paulo Monteiro  
Dr. Paulo Monteiro has received an honorarium from 3M Oral Care

## About the Case:

Patient was not satisfied with current anterior restorations (maxillary central incisors). Patient also expressed dissatisfaction with shade and surface texture.

## Challenge:

Creating smooth and natural-looking restorations for patients who demand the highest level of esthetics can be challenging. The use of materials that mimic the shade and opacity of dentin and enamel is critical for success.



**Fig. 1:** Initial situation: The patient was unhappy with the esthetics of their maxillary central incisors.



**Fig. 2:** After tooth preparation, the teeth were etched for 15 seconds using 3M™ Scotchbond™ Universal Etchant.



**Fig. 3:** 3M™ Scotchbond™ Universal Adhesive was scrubbed onto the surface of the prepared teeth for 20 seconds, gently air dried for 5 seconds, and light cured\* for 10 seconds with the 3M™ Elipar™ DeepCure-S LED Curing Light.



**Fig. 4:** A silicone matrix was used to create the palatal wall with 3M™ Filtek™ Supreme XTE Universal Restorative, shade CT, and light cured\*.



**Fig. 5:** The interproximal enamel layer was built with 3M™ Filtek™ Supreme XTE Universal Restorative, shade A3E, and light cured\*. For the incisal halo, 3M™ Filtek™ Supreme XTE Flowable Restorative, shade W, was used.



**Fig. 6:** Application of the dentin layer using 3M™ Filtek™ Supreme XTE Universal Restorative, shade A1D, and light cured\*. For volume control, a Misura instrument was used to leave a 0.5mm space for the facial enamel.



**Fig. 7:** Creation of mamelons and the application of a small portion of 3M™ Filtek™ Supreme XTE Universal Restorative, shade CT, was added between the dentin layer and the incisal halo, and light cured\*, to enhance translucency at the incisal edge.



**Fig. 8:** The final layer of 3M™ Filtek™ Supreme XTE Universal Restorative, shade A3E, was applied and light cured.



**Fig. 9:** 3M™ Sof-Lex™ Contouring and Polishing Discs are used to design and define the restoration anatomy.



**Fig. 10:** Pre-polishing of restoration with 3M™ Sof-Lex™ Pre-Polishing Spiral.



**Fig. 11:** Final polishing with the 3M™ Sof-Lex™ Diamond Polishing Spiral creates a smooth finish and high-gloss polish.



**Fig. 12:** Natural looking final restoration.

\* Light cured according to the manufacturer's guidelines

# Diastema Closure

Clinical dentistry and photography by Dr. Marcos Vargas

Dr. Marcos Vargas has received an honorarium from 3M Oral Care

## About the Case:

A young female patient with an anterior diastema mesial to the right lateral incisor. The main esthetic concern was to eliminate the space and increase the size of the lateral incisor.

## Challenge:

To close a post-orthodontic diastema on an anterior tooth while still maintaining proper contour and esthetics.



**Fig. 1:** The patient presented with an anterior diastema.



**Fig. 2:** Isolation with a rubber dam pushed the gingiva apically to provide accessibility to the cervical area and allowed for the creation of proper anatomical contour and emergence profile.



**Fig. 3:** A mylar strip was used to protect the adjacent tooth from etching. The mesial proximal, facial and lingual areas were etched with 3M™ Scotchbond™ Universal Etchant.



**Fig. 4:** To prevent contact of the adhesive with the adjacent tooth, a second mylar strip was placed. Adhesive was applied, scrubbed for 20 seconds, gently air dried for 5 seconds, and light cured\* with an LED Curing Light for 10 seconds.



**Fig. 5:** 3M™ Filtek™ Supreme XTE Universal Restorative, shade XWE, was placed in two increments and each increment was light cured\* for 10 seconds. The first increment was placed over the facial aspect of tooth #7.



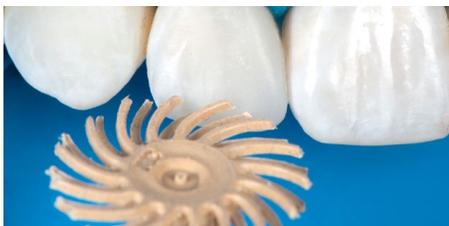
**Fig. 6:** This increment was spread and feathered toward the middle of the tooth to improve blending, and light cured\*. The second increment was placed to fill the palatal aspect of the diastema, light cured\*, and with the help of a mylar strip, the diastema was completely closed.



**Fig. 7:** To begin the contouring and polishing process, the proper length was first established with a 3M™ Sof-Lex™ XT Contouring Disc. Second, an incisal-facial line angle was formed. Third, the mesio-facial line angle, as well as the incisal, facial and palatal embrasures were defined.



**Fig. 8:** Once contoured, the surface characterization of the adjacent teeth was copied onto the restoration using a fine diamond (not shown).



**Fig. 9:** Finishing and polishing was completed in two steps. First, a beige 3M™ Sof-Lex™ Pre-Polishing Spiral was used to remove scratches and prepare the composite for final polish.



**Fig. 10:** Next, a pink 3M™ Sof-Lex™ Diamond Polishing Spiral was used to impart a smooth, high-gloss polish. These spirals easily adapt to all surfaces. Lastly, the proximal surface was polished with 3M™ Sof-Lex™ Finishing and Polishing Strips.



**Fig. 11:** Upon finishing the restoration, the patient was very satisfied by the ideal contour, surface smoothness and life-like luster.



**Fig. 12:** The patient returned one week later for a final post-operative appointment and was very satisfied with the final restoration.

\* Light cured according to the manufacturer's guidelines

3M™ Filtek™ Supreme XTE Flowable Restorative

# Class V Carious Lesion Restoration

Clinical dentistry and photography by Dr. Gunnar Reich  
Dr. Gunnar Reich has received an honorarium from 3M Oral Care

## About the Case:

A routine clinical examination found a cervical lesion on the first mandibular premolar.

## Challenge:

Providing a restorative solution that is both esthetic and long lasting.



**Fig. 1:** A Class V lesion is evident on the first mandibular premolar.



**Fig. 2:** A minimally invasive Class V preparation was made to remove the carious lesion.



**Fig. 3:** An instrument was used to protect the gingival tissues while the preparation was etched for 15 seconds using 3M™ Scotchbond™ Universal Etchant followed by rinsing and drying.



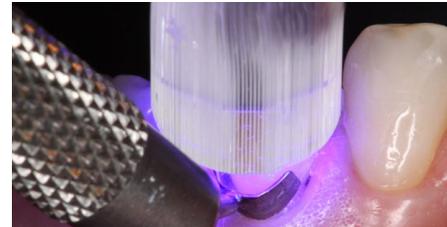
**Fig. 4:** 3M™ Scotchbond™ Universal Adhesive was applied and scrubbed into the surface for 20 seconds.



**Fig. 5:** After air drying for approximately 5 seconds, the adhesive is light cured\* for 10 seconds with the 3M™ Elipar™ DeepCure-S LED Curing Light.



**Fig. 6:** 3M™ Filtek™ Supreme XTE Flowable Restorative was applied using an application tip attached to the restorative syringe.



**Fig. 7:** The 3M™ Filtek™ Supreme XTE Flowable Restorative is light cured\*.



**Fig. 8:** The final restoration after minimal finishing and polishing.

\* Light cured according to the manufacturer's guidelines

3M™ Filtek™ One Bulk Fill Restorative

# Class I Composite Replacement

Clinical dentistry and photographs by Dr. Carlos Fernández Villares  
Dr. Carlos Fernández Villares has received an honorarium from 3M Oral Care

## About the Case:

A 39 year old woman seeking replacement of composites on first and second molars due to hyper-sensitivity and secondary caries. A single-shade bulk fill composite was chosen for strength, esthetics and ease of use.

## Challenge:

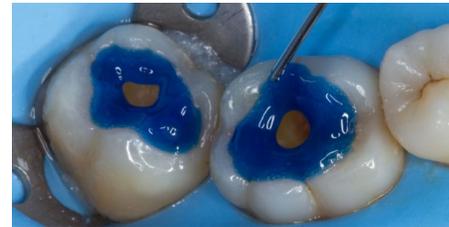
Imitate nature with a single shade of composite using a simple and efficient direct composite technique.



**Fig. 1:** Initial Situation: Class I composite restorations on first and second molars in need of replacement due to hypersensitivity and secondary caries.



**Fig. 2:** After placement of a rubber dam, the composite restorations and carious tooth structure were removed.



**Fig. 3:** Enamel is selectively etched for 15 seconds using 3M™ Scotchbond™ Universal Etchant followed by rinsing and light drying.



**Fig. 4:** 3M™ Scotchbond™ Universal Adhesive is applied and scrubbed into the surface for 20 seconds.



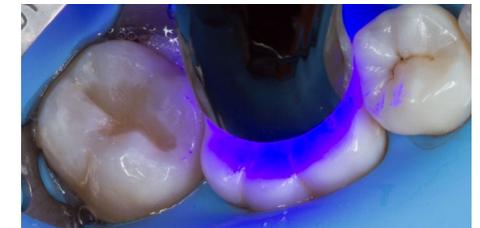
**Fig. 5:** After air drying for approximately 5 seconds, the adhesive is light cured for 10 seconds with the 3M™ Elipar™ DeepCure-S LED Curing Light.



**Fig. 6:** 3M™ Filtek™ One Bulk Fill Restorative, shade A1, is placed into the cavity and sculpted to achieve the desired anatomy.



**Fig. 7:** An instrument was used to carve anatomical grooves into the occlusal surface of the composite before light curing.



**Fig. 8:** Per manufacturer's guidelines, the restoration was cured for 20 seconds on the occlusal surface using a curing light with an intensity of 1000mw/cm<sup>2</sup> or greater.



**Fig. 9:** The 3M™ Sof-Lex™ Pre-Polishing Spiral prepared the composite for the final polishing step.



**Fig. 10:** The 3M™ Sof-Lex™ Diamond Polishing Spiral is used to complete the final composite polishing.



**Fig. 11:** The final esthetic and functional restorations having used only one shade of 3M™ Filtek™ One Bulk Fill Restorative.

\* Light cured according to the manufacturer's guidelines

3M™ Filtek™ One Bulk Fill Restorative

# Class II Amalgam Replacement

Clinical dentistry and photography by Dr. Giuseppe Marchetti

Dr. Giuseppe Marchetti has received an honorarium from 3M Oral Care

## About the Case:

The patient came to the office with pain associated with caries in multiple teeth.

## Challenge:

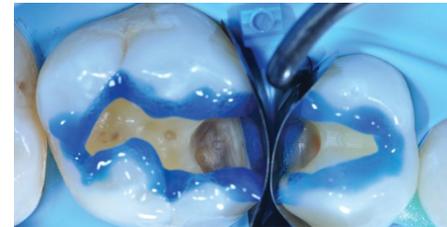
Composite adaptation to ensure good marginal contacts in Class II restorations. Handling and sculptability are also important when placing posterior composites.



**Fig. 1:** Initial Situation: Replacement of an insufficient amalgam restoration on the upper first molar and treatment of a carious and painful lesion on the premolar.



**Fig. 2:** Amalgam and carious tissue removed. Placement and adaptation of the sectional matrix.



**Fig. 3:** Enamel is selectively etched for 15 seconds using 3M™ Scotchbond™ Universal Etchant followed by rinsing and light air drying.



**Fig. 4:** 3M™ Scotchbond™ Universal Adhesive is applied and scrubbed into the surface for 20 seconds.



**Fig. 5:** 3M™ Filtek™ One Bulk Fill Restorative, shade A2, is placed directly into the cavity in a single increment and light cured with an LED Curing Light (output of 1000-2000 mW/cm<sup>2</sup>) for 10 seconds occlusal, buccal and lingual. (When using a Halogen Light with output of 550-1000 mW/cm<sup>2</sup> cure 20 seconds occlusal, buccal and lingual).



**Fig. 6:** 3M™ Filtek™ One Bulk Fill Restorative following contouring and finishing.



**Fig. 7:** After using the 3M™ Sof-Lex™ Pre-Polishing Spiral, a final high-gloss polish is created using the 3M™ Sof-Lex™ Diamond Polishing Spiral on a moist surface.



**Fig. 8:** Final restoration is very natural-looking and esthetic.

3M™ Filtek™ Bulk Fill Flowable Restorative

# Class II Composite with Universal Capping

*Clinical dentistry and photography by Dr. Gunnar Reich  
Dr. Gunnar Reich has received an honorarium from 3M Oral Care*

## About the Case:

A routine clinical examination found a composite restoration with marginal staining and leakage on the mandibular first molar.

## Challenge:

Ensuring excellent adaptation of the composite in the proximal box of a Class II preparation.



**Fig. 1:** A first molar in need of replacement due to marginal staining and microleakage of the composite.



**Fig. 2:** The prepared tooth after placement of a rubber dam, wedges and a clear matrix.



**Fig. 3:** After etching, rinsing, drying and placement of 3M™ Scotchbond™ Universal Adhesive, 3M™ Filtek™ Bulk Fill Flowable Restorative was placed into the cavity beginning in the deepest portion of the preparation to ensure good adaptation in the proximal box.



**Fig. 4:** 4 mm of 3M™ Filtek™ Bulk Fill Flowable Restorative, shade A3, was placed and light cured\* for 20 seconds using the 3M™ Elipar™ DeepCure-S LED Curing Light.



**Fig. 5:** After placement of a 2mm (minimum) “capping layer” of 3M™ Filtek™ Supreme XTE Universal composite, shade C2B, the restoration was light cured\* for 20 seconds using the 3M™ Elipar™ DeepCure-S LED Curing Light.



**Fig. 6:** Natural looking and esthetic restored first molar.

\* Light cured according to the manufacturer's guidelines

3M™ Filtek™ Bulk Fill Flowable Restorative  
with 3M™ Filtek™ Bulk Fill Posterior Restorative

# Class II Carious Lesion Restoration

*Clinical dentistry and photography by Dr. Walter Devoto  
Dr. Walter Devoto has received an honorarium from 3M Oral Care*

## About the Case:

Examination of a 24 year-old female patient found that the upper-right first molar and premolar were found to have carious lesions and were in need of treatment.

## Challenge:

Create esthetic, affordable and durable composite restorations.



**Fig. 1:** Discoloration of dentin visible through intact enamel.



**Fig. 2:** Rubber dam isolation is placed to maintain a dry operative field. Minimally invasive cavity preparations show complete removal of carious lesions.



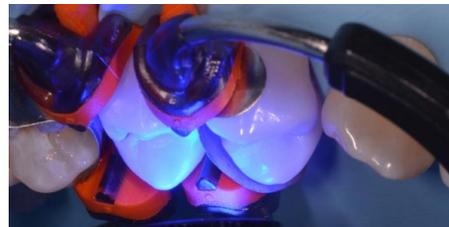
**Fig. 3:** Placement and adaptation of a sectional matrix system.



**Fig. 4:** Enamel is selectively etched for 15 seconds using 3M™ Scotchbond™ Universal Etchant followed by rinsing and drying.



**Fig. 5:** 3M™ Scotchbond™ Universal Adhesive is applied and scrubbed into the surface of the preparations for 20 seconds.



**Fig. 6:** After air drying for approximately 5 sec., the adhesive is light cured\* for 10 sec. with the 3M™ Elipar™ DeepCure-S LED Curing Light.



**Fig. 7:** 3M™ Filtek™ Bulk Fill Flowable Restorative is placed in the proximal box of the restoration and light cured (20 sec. for Universal shade and 40 sec. for shades A1, A2 and A3).



**Fig. 8:** 3M™ Filtek™ Bulk Fill Posterior Restorative, shade A3, is placed in a single increment and the occlusal anatomy was shaped before light curing.



**Fig. 9:** The occlusal surfaces of the restorations are light cured\* for 10 seconds. After matrix removal, the restorations are light cured\* for an additional 10 seconds on both the buccal and lingual surfaces using the 3M™ Elipar™ DeepCure-S LED Curing Light.



**Fig. 10:** 3M™ Sof-Lex™ Contouring and Polishing Discs are used to create primary and secondary anatomy before final polishing.



**Fig. 11:** Pre-polishing with a 3M™ Sof-Lex™ Pre-Polishing Spiral.



**Fig. 12:** The 3M™ Sof-Lex™ Diamond Polishing Spiral was used to create the smooth, high-gloss polish seen in the final restorations.

\* Light cured according to the manufacturer's guidelines



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