

Class IV Restoration with Ceram-X™ Duo Film from Dr. Pierre Colon

DENTSPLY products used in this film:

- Ceram-X™ Mono, Nano-Ceramic Restorative
- X-flow™, Universal Flowable Restorative
- Smartlite™ PS, LED Curing Light
- Enhance®, Finishing and Polishing System
- Prisma®-Gloss™ Regular and Extrafine pastes

Time

Introduction

0000-0019 The clinical case of this patient is an aesthetically-deficient composite at the tooth 21. The pre-operative X-ray picture shows the very large volume of this restoration, which involves the whole of the incisal edge.

Time

Shade selection and cleaning

0020-0050 The choice of shade is made using a Vita® Shade Guide, from which it is evident that the A2 shade corresponds to the situation.

The composite system chosen, namely the **Nano Ceramic Restorative Ceram-X Duo**, provides in an own shade system a recipe for all the Vita shades. For the A2 Vita shade the recipe indicates a combination of two shades, E2/D2 (i.e Enamel shade N°2 and Dentine Shade N°2). Ceram-X Duo will therefore allow us to restore the tooth with two different opacities.

0051-0103 The shade guide supplied in the **Ceram-XDuo** Kit will allow separate evaluation of the saturation levels of shade **D2 and E2**.

0104-0128 The rubberdam is placed, with ligatures around each tooth to ensure perfect isolation. We start by cleaning the dental surfaces, with a small brush mounted at a contra-angled handpiece and a polishing paste, which is later removed thoroughly by means of prolonged rinsing.

Time

Removal of the old composite restoration and cavity preparation

0129-0212 The old composite resin restoration is then removed, using a pear-shaped bur (reference 830). The translucency of the composite resin allows the dental tissues to be clearly differentiated from the filling material. The closer we get to the dentine, the more carefully we proceed. With small moves, we must take precautions so as not to damage the enamel of the neighboring tooth.

0213-0233 A large labial bevel is then produced, continuing it proximally to ensure perfect continuity in terms of tightness of restoration, in order to prevent any adverse colouring that may occur subsequently.

0234-0241 The neighboring tooth shall be protected while the proximal bevel is being made.

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- 0242-0258 The lingual bevel is then produced, using an ovoid bur; this allows us to create a bevel with clearly visible edges that can be easily recognized.
- 0259-0303 An abrasive strip finishes the proximal surface.
- 0304-0316 This lingual view shows clearly the limit of the preparation.
- 0317-0336 At this point, the whole of the preparation is finished and we can start on the adhesion procedure. In this case it consists of a single-component system that uses an etching gel.
- 0337-0351 Obviously the neighbouring teeth must be protected with a metallic matrix in order to avoid contact between the etching gel and the teeth.

Time Placement of the etch gel and adhesive

- 0352-0413 The gel is applied homogeneously right across the bevel on the palatal and labial surfaces. The application time is of about thirty seconds as we are essentially working on the enamel.
- 0414-0428 Rinsing ensures thorough removal of the phosphoric acid, then followed by drying. It gives a chalky white appearance, typical of etched enamel.
- 0429-0443 The adhesive system is then applied meticulously to all the conditioned surfaces. We take care that the adhesive system is allowed to penetrate into the exposed dentine.
- 0444-0455 After the solvent is evaporated, the filling material must be light-cured with the **Smartlite PS**.
- 0456-0502 At this stage, the adaptability of the silicone guide prepared earlier with **Aquasil Soft Putty** is verified.

Time Placement of X-flow Opaque Shade

- 0503-0514 The first stage of our restoration consists of masking the coloured dentine by applying a small amount of **X-flow**, a flowable restorative, used here in the Opaque shade.
- 0515-0530 A second layer of X-flow is applied directly with this thin canula in order to provide continuous masking of the brownish dentine.
- 0531-0540 The positioning of the flowable is adjusted using a probe and it is immediately light-cured.
- 0541-0550 A small amount of brownish dentine is still visible, encroaching onto the labial face, which is masked with the opaque shade of X-flow.

Time Layering with Ceram-X Duo Dentine Shade D2

- 0551-0610 We now turn to the restoration of the lingual surface, which involves a layer of **Ceram-X Duo D2** material (i.e dentine shade).

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- 0611-0625 The silicone guide is placed in the mouth. Care is taken to ensure that the composite does not run down to the edge. The adaptation along the edges can indeed be improved by use of the spatula.
- 0627-0641 We can now proceed to several applications, always keeping the silicone guide in place.
- 0642-0707 A second application is made here. Care should always be taken not to extend the material to the edge as we are working with a dentine shade. This, because we wish, to recreate the translucency at the edge of the restoration with the enamel shade.
- 0708-0726 Each layer is thoroughly cured, and through successive applications, we produce the shape of the vestibular face, which in this case contains a number of small „convexities“ – clearly visible on tooth 11.
- 0728-0740 As it is one of the central incisors, the adjacent tooth can be taken as an ideal model in order to restore the same morphological appearance.
- 0741-0757 The central „convexities“ are then formed, always working the material under compression with the spatula. The desired shape is created through compressing the composite against the tooth, so that it can be placed where one desires.
- 0758-0811 Usually only one spatula is sufficient for this type of operation, especially on anterior teeth.
- 0812-0823 The second „convexity“ is then photo-polymerised, and we progressively go on building up the vestibular surface.
- 0824-0843 This first outlines of the mesial and distal angles that we have created are then photo-polymerised and we progressively build an anatomical configuration similar to that of the neighbouring tooth.
- 0844-0903 An incisal view is of particular importance for appreciating the volumes that we have already restored. It helps us avoid excess of material that would, after polishing, hide up all the enamel shade composite layers that we are going to apply subsequently on the vestibular face.

Time

Layering with Ceram-X Duo Enamel Shade

- 0904-0948 We now see the enamel shade that has been placed, and polymerised after each application. In the same way, the silicone guide will be used to position this enamel shade along the free edge, while working carefully with the material in compression all the time so as not to include any air bubbles.
- 0949-1008 After the curing phase, we have a good evaluation of the overall volume of the incisor, of the orientation of the free edge and, already, and to some extent of the configuration of the proximal angles.

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- 1008-1018 Nevertheless, some material is still missing in some parts and we correct this by adding small applications and several layers of the composite.
- 1019-1037 Of course, the use of a fine matrix and preferably, a metallic matrix, avoids any contact with the proximal tooth.
- 1038-1047 A cutting instrument such as a small periodontal curette allows any excess to be removed at this stage.
- 1048-1112 We will now make some finishing improvements on the mesial part, with the insertion of a very fine metallic matrix band and a final application of composite material.
- 1113-1150 It remains to complete the modelling of the various vestibular „convexities“. It can clearly be seen that the material is worked so as to avoid incorporation of air bubbles, purely by compressing it progressively so that it spreads across the entire labial surface.
- 1151-1219 A final application improves the mesial angle. One of the advantages of this technique, is to visualize the aesthetic aspects of the configuration of the final restoration.

Time **Finishing and Polishing**

- 1220-1236 The first excess amounts are removed at this stage, using a red-ring bur, mounted on a red-ring counter angle, preferably on a turbine, to allow better tactile sensitivity.
- 1237-1255 It is important to preserve with the bur the volumes of the various convexities, which will allow to obtain a light reflection quite similar to the one of the neighbouring tooth.
- 1256-1318 The edge has already been polished using an **Enhance Disc**. In the same way, always using this Enhance Disc, finishing touches are made on the distal and the mesial angles.
- 1319-1324 The slight diastema that remains is the one that existed before; the patient was satisfied with this.
- 1325-1338 Always remember to look via the incisal edge at the volume of the restoration, to ensure that proper alignment with the other teeth in this section is maintained.
- 1339-1358 Polishing is then completed using the **Prisma-Gloss polishing pastes** and an **Enhance Cup**. The Enhance system includes two polishing pastes of different grits (Regular and Extrafine).
- 1359-1408 These Enhance Cups can be used on both the smooth labial and concave palatal surfaces
- 1409-1419 The light reflections are quite similar on both teeth 11 and 21, and well integrated with the vestibular surface, which has been nicely restored.

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1423-1443 At this point the rubber dam is removed and the articulation points are adjusted in the classical way. One must verify that the anterior line is properly established.

Time **Final view and conclusion**

1445-1459 Here is the final view of the completed restoration just after removal of the rubber dam. The teeth are still dehydrated, which explains the still partial visibility of the composite resin restoration.

1500 to End In the longer term, one can see that the aesthetical integration of the **Ceram-X Duo** restoration is excellent.