# Aesthetic Tooth Replacement and Restoration of the Anterior Maxilla With Pressed-Ceramic Restorations

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Contemporary ceramic materials and fabrication techniques enable dental professionals to predictably replace missing teeth, even in aesthetic regions such as the anterior maxilla. Recently, laboratory procedures that use computer-assisted design/computer-aided machining have proliferated in reports throughout the dental literature. Nevertheless, the proven long-term performance of pressed-ceramic materials (eg, Authentic, Microstar, Lawrenceville, GA; IPS Empress, Ivoclar Vivadent, Amherst, NY; OPC, Jeneric Pentron, Wallingford, CT) demonstrates the utility of such systems as the gold standard in the dental laboratory.

Laboratory technicians can fully layer pressed-ceramic systems using techniques they already employ for metal-ceramic restorations. Pressed ceramics also allow the creation of natural vitality, translucency, and light diffusion during the laboratory fabrication process. When combined with careful adherence to the patient's aesthetic expectations and utilization of effective communication among the attending dental professionals, these systems enable the predictable delivery of a functional, natural-looking result.

## Case Presentation

A 27-year-old female patient presented for the replacement of tooth #9[21]. The appropriate clinical and radiographic evaluations were performed, and results from these examinations were used by the clinician and the technician to form a comprehensive treatment plan for the patient. Although various treatment options (including implant therapy) were proposed, the patient elected to receive a three-unit, pressed-ceramic fixed partial denture (FPD) to replace the missing central incisor. A matching veneer would be used to replace the patient's existing restoration on tooth #10[22], thus providing a conservative treatment that would allow the restoration of additional teeth at a subsequent time. This presentation demonstrates a detailed ceramic buildup for the fabrication of the three-unit FPD and its matching all-ceramic veneer.


**Figure 1A.** Preoperative facial view of patient who presented for the aesthetic restoration of the anterior maxilla. Note the existing veneer on tooth #10[22].


**Figure 1B.** Postoperative view of the patient demonstrates the natural integration and enhanced aesthetics provided by the pressed-ceramic restorations.

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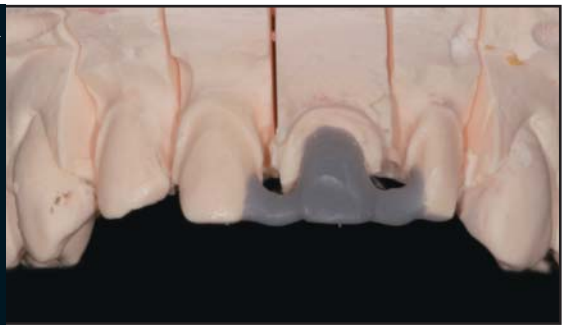
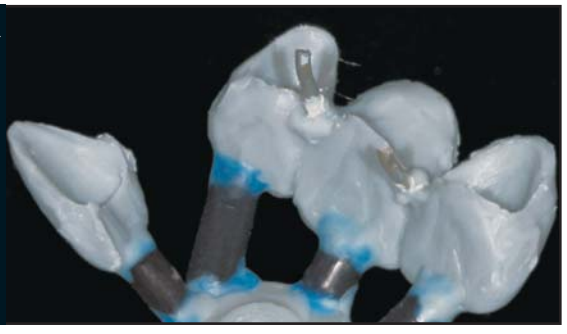
2A



2B

3A



3B

4A

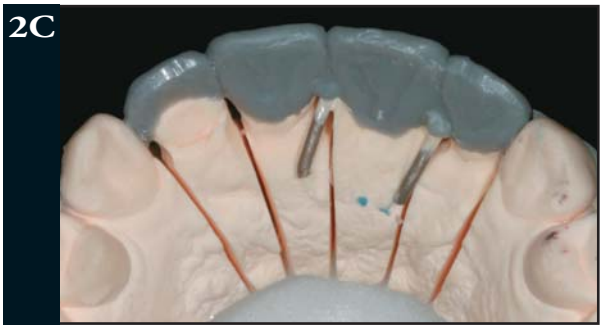
4B

4D

4E

5A

5B





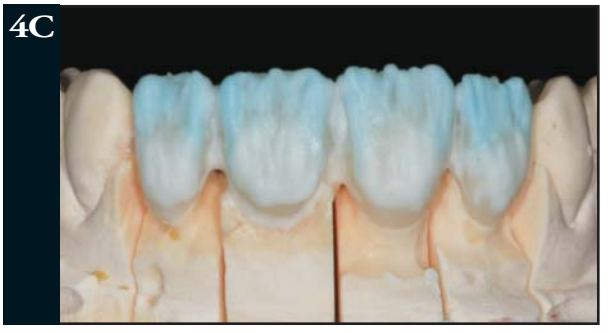





**Figure 2A,B,C.** Once all patient data (eg, photographs, impressions, models) were received from the clinician, the laboratory phase was initiated. A "Maryland"-style framework design would be used for the FPD. This framework would be wax-cast, opaqued, and then waxed over on the model to full contour. The small metal "wings" of the framework would subsequently be pressed over in ceramic.

**Figures 3A,B,C.** The wax patterns were sprued and then invested. After approximately 20 minutes of bench set time, the invested patterns were placed in a burnout oven for 1 hour and pressed with a A0+ ingot (Authentic, Microstar, Lawrenceville, GA). The pressed ceramics were then cut back incisally by 2.5 mm to facilitate the development of natural characterizations; ceramic material was removed from the proximal regions as well. The small framework connectors, composed of a chrome-cobalt alloy, were eliminated from the pressed ceramics. As the initial frame-out, ceramic materials (Opal, Authentic, Microstar, Lawrenceville, GA) were built out incisally to beyond full contour to accommodate for shrinkage.

**Figures 4A,B,C,D,E,F.** Since the ceramic core had been completely eliminated from the incisal third, the possibility of a hard transition zone existed. Intensive opacious dentin materials (IOD #3 and #4, Authentic, Microstar, Microstar, Lawrenceville, GA) were used to extend the pressed dentin core up through the incisal third, connecting the translucent zone to the dense opacious zone. These materials were feathered out with a brush to soften the effect and blend the transition between the pressed-ceramic core, the translucent material, and the more chromatic-intensive dentin materials.

A thin layer of Enamel Pearl (Authentic, Microstar, Lawrenceville, GA) was applied over the apical extensions of the IOD materials. This softened the edge of the intensive opacious dentin layer. Cervically, a mixture of powders (ie, modifier Orange, Pink, and Clear) were used to create color and fired accordingly. For the initial enamel application, a combination of SL 57 and Opal #2 incisally and Transparent NT cervically (Authentic, Microstar, Lawrenceville, GA) were used to filter the chromatic materials that had previously been added. The high-value NT material was then extended through the incisal one third, and the final wrap of Opal #2 (Authentic, Microstar, Lawrenceville, GA) was used to develop full form.

**Figures 5A,B,C.** Once the enamel buildup had been fired, the contoured restorations were readied for final glazing and polishing. On the cast, the lingual placement of the FPD connector was apparent, and the depth of the embrasures was evident facially. This process enabled the ceramist to predictably fabricate pressed-ceramic restorations that, upon final try-in and cementation, restored the patient to ideal function and aesthetics.

## Acknowlegment

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