

# How to seat posterior all-ceramic crowns

Ivoclar Vivadent's Multilink Automix universal luting cement provides reliability, durability.

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This case demonstrates placement of highly esthetic indirect restorations using an efficient and reliable adhesive cementation technique. Reducing the risk of debonding, fracture and restorative failure, the all-ceramic and adhesive materials selected provided a stable, durable and long-lasting bond. By carefully considering material such as Ivoclar Vivadent's Multilink Automix and technique selection, the patient benefited from restorations that demonstrated ideal fit, function and esthetics.

## **About the material**

Demonstrating excellent reliability and durability in the anterior and posterior, Multilink Automix is an innovative and universal, self-cure with an optional light cure luting cement indicated for inlays, onlays, crowns, bridges and posts. Multilink Automix allows cementation of a range of restorative materials including metal and metal ceramics, oxide ceramics, fiber-reinforced composites, precious alloys, and all-ceramics.

Used with a one-step primer (Multilink A&B, Ivoclar Vivadent) that self-etches, self-cures and seals dentin in 15 seconds, excellent marginal adaption and high immediate bond strengths are achievable. The hydrolytically stable acidic monomers ensure durable adhesion and immediate bonding and reaches complete polymerization in 5-6 minutes without using a curing light.

Using the Automix delivery system (Ivoclar Vivadent), a consistent mix is achieved without activation capsules or application tools and devices. The "Easy Clean-up" formula allows excess cement to be pre-cured into a gel-like consistency for simpler and more efficient removal.

## **Case presentation**

The patient presented for functional and esthetic restorations in the posterior and was given a comprehensive esthetic and functional exam. All diagnostic information was

gathered and a definitive treatment plan developed. Due to masticatory forces under where the proposed restorations would function, an esthetic lithium disilicate material with high monolithic strength (IPS e.max CAD) that would be fabricated using CAD/CAM technology .

The teeth were prepared following the manufacturer's guide for adhesive cementation of CAD/CAM fabricated posterior lithium disilicate crowns. For proper preparation, 1.5 mm to 2.0 mm of occlusal reduction was completed, along with 1.5 mm of axial reduction and 1.0 mm reduction at the gingival margins. The internal line angles were rounded, and a flat-ended tapered diamond bur established a butt-joint margin.

**Step 1:** Prior to seating, the lithium disilicate crowns (Fig. 1) were tried-in to ensure proper fit, function and esthetics. Critical to the success of cementation, a fluid-free field was established using self-supporting cheek-retractors, cotton rolls and dry-angles in the anterior. A latex-free lip and cheek retractor (OptraGate, Ivoclar Vivadent) also was placed to ensure improved visibility and accessibility. For a patient who salivates excessively, place the patient on nasal decongestants (Claritin D/Chlor-Trimeton, Merck & Co.), for one to two days prior to treatment to reduce the risk of salivary contamination.

**Step 2:** After achieving complete isolation, the preparations were cleaned with a slurry of water and pumice. If bacterial contamination is a concern, a slurry of pumice and 2% chlorhexidine rinse (Consepsis, Ultradent Products,) may be used based on its antimicrobial effect. The preparations were blot-dried or lightly dried so they remained moist.

**Step 3:** Prior to applying the bonding agent, the preparations were checked for moisture and debris. The gingival tissues were examined using a prophylactic angle and micro-tip scrubbing for bleeding, which would contaminate the adhesive cement. After confirming healthy tissue, individual preparation margins were cleaned manually with micro-tip brush scrubbing and the water/pumice slurry. To remove contaminants and the remaining slurry solution, the preparations were irrigated with water and air-dried.

**Step 4:** After preparing the dentition, the lithium disilicate crowns were etched with 5% hydrofluoric acid gel (IPS Ceramic Etching Gel, Ivoclar Vivadent) for 20 seconds to remove any remaining contaminants and achieve the manufacturer's recommended etch pattern (Fig. 2). The crowns were thoroughly rinsed with water and air-dried (Fig. 3).

**Step 5:** A silane coupler (Monobond Plus, Ivoclar Vivadent) was placed on the internal crown surfaces and allowed to set for 1 minute (Figs. 4 & 5). Air was used to remove excess material. Then the crowns were ready to be filled with adhesive cement (Multilink Automix) and seated (Fig. 6).

**Step 6:** To facilitate a high immediate bond strength, seal the dentin and achieve ideal marginal adaptation, a self-etching and self-curing primer (Multilink A&B) was mixed

and applied to prepared dentition. Three drops (1 per restoration) of Multilink A were mixed with 3 drops (1 per restoration) of Multilink B in the provided mixing tray (Figs. 7-9). Using the micro-tip brush, primer solution was scrubbed into each preparation to ensure sufficient coverage (15 seconds on dentition; 30 seconds on enamel).

**Step 7:** After applying primer, air was used to remove excess solution and thoroughly dry the surface (Fig. 10).

**Step 8:** Immediately following, the self-cure with optional light cure universal adhesive cement (Multilink Automix) was extruded from the automix tip into the first lithium disilicate crown (Fig. 11). The crown was seated on the preparation and firm pressure applied. The remaining restorations were filled and seated consecutively in the same manner (Fig. 12).

**Step 9:** The Wave Technique was used to facilitate proper curing and seating. Holding the curing light 2 mm from the crowns and slightly waving it in a single direction from one interproximal area to the next, the cervical and/or buccal surfaces of each crown were cured for 3-4 seconds each. Excess cement was removed from the buccal and interproximal areas with a scaler (Fig. 13). After removing all excess, the cervical aspect of the buccal surfaces of each crown was cured for 5-10 seconds. The lingual were then cured for 3-4 seconds each, and excessive cement removed with the scaler.

Upon completion, the interproximal areas of all restorations were cleaned with dental floss. The seated crowns were cured for 20 seconds on high power (approximately 1,200 mW/cm<sup>2</sup>) on both the buccal and lingual surfaces.

The patient was very pleased with the final lithium disilicate CAD fabricated crowns (IPS e.max CAD) seated intraorally with the universal dual-cure adhesive cement (Multilink Automix). The restorations ultimately provided the function and strength required, along with the esthetics the patient desired (Fig. 14).