1) Always instruct the lab to etch the intaglio surface of the restoration with **5% Hydrofluoric Acid for 20 seconds** only and rinse for bonding.

2) Try-in the restoration. Verify marginal adaptation, interproximal contacts, and static and functional occlusion. Remove the restoration from the patient’s mouth and make necessary adjustments. After necessary adjustments are made to the restoration, place **IVOCLEAN** inside the restoration to cleanse the restoration of contaminants such as saliva and heme. This is a chemical reaction that removes phosphate chain groups that can have a negative effect on bonding. This reaction will take **30 seconds** to complete.
   a. Alternatively, the restoration can be re-etched using 5% HF acid for **20 seconds** only and rinsed thoroughly. This can be challenging due to how caustic HF acid is, so be very careful with what comes into contact with the HF acid.

3) **Silanate** the intaglio surface of the restoration to be bonded. Just plain **silane** will work, so will a product like **Monobond Plus**. This is a chemical reaction that will couple the silica in the restoration to the methacrylate in the composite resin cement. The reaction takes at least **90 seconds** to complete.

4) At this point, the ceramic is adequately prepared to be bonded to the tooth. First, the tooth is well isolated. Then, the tooth is prepared to accept the restoration as follows:
   a. The prepared tooth is cleaned with oil free flour of pumice.
   b. The prepared tooth is cleansed with chlorhexidine.
c. The tooth is desensitized using a product like MicroPrime G or GLUMA.
d. The prepared tooth structure is adequately acid etched.
   i. 25 second application of 37% phosphoric acid for enamel
   ii. 15 second application of 37% phosphoric acid OR 20 second scrub with self-etching primer for dentin
e. Primer is applied to prepared tooth structure for 20 seconds with a microbrush. The solvent is evaporated with light air pressure.
f. Adhesive is applied to the prepared tooth structure for 20 seconds with a microbrush. The solvent is evaporated with light air pressure.
   i. If using a light cured only composite resin cement and associated adhesive, it may be advisable to cure the adhesive layer before inserting the restoration to make sure the adhesive layer is completely polymerized.
   ii. If using a dual cure composite resin cement and associated adhesive, it may be advisable to seat the restoration and allow the chemical reaction to polymerize the adhesive before ensuring a complete cure with the curing light.

5) Load the restoration with the composite resin cement of your choosing. **YOU MUST ENSURE THAT THE PRIMER, ADHESIVE BOND, AND RESIN CEMENT ARE ALL COMPATIBLE!**
Considerations include but are not limited to light curable only adhesive and cement versus dual cure adhesive and cement.
a. Adhesive bond can be applied to the inside of the crown but is not necessary. Keep in mind that a thin layer of bond will improve wettability of the resin cement to the intaglio surface of the crown, but will not increase the bond strength. It also has the potential to change the chemistry of the composite resin cement since it is an unfilled composite.

6) Ensuring excellent isolation, seat the composite resin cement loaded crown, making sure to rock the restoration buccal/lingual and mesial/distal so it is completely seated.
   a. Cement removal can be accomplished in many ways. A rubber tip stimulator may be considered.

7) Once gross cement removal is complete:
   a. Allow a dual cure resin cement to complete its chemical cure per manufacturer specifications (usually around 6 minutes). Verify fine cement removal and light cure for 20 seconds on each accessible surface to photo-polymerize any uncured composite.
   b. Light cure a light cure only composite resin cement briefly and verify fine cement removal. Complete photo-polymerization for 20 seconds on each accessible surface. For thicker restorations, consider extra curing time, being cognizant not to over-heat the tooth (depending on the type of curing light that is used).

8) Verify cement removal, with rotary instruments if necessary. Verify marginal adaptation, interproximal contacts, and static and functional occlusion. Give post-operative instructions and expectations and dismiss the patient with no restrictions.
EXAMPLES OF COMPATIBLE COMPOSITE RESIN CEMENT SYSTEMS

1) Multilink Automix (by Ivoclar)
   a. This is a closed system: the Multilink Automix primer and adhesive can only be used with the Multilink Automix Cement, and not with other composite resins.

2) ExciTE F and Variolink (light cure only) (by Ivoclar)

3) ExciTE DSC (Dual Cure) and Variolink OR SpeedCem** (with dual cure catalyst added) (by Ivoclar)

4) Optibond XTR Self Etching Primer and Adhesive with either Nexus NX3 OR MaxCem Elite** (by Kerr)

5) All-bond Universal and DUO-Link (by Bisco)

6) Scotchbond Universal and Rely X Ultimate (by 3M ESPE)

**NOTE** Self-etching, Self-priming, Self-adhesive composite resin cements do not provide actual bonding to tooth structure alone and should be considered for restorations that can be cemented, but not bonded. If the requisite steps for bonding are completed, these resin cements CAN be used to bond ceramic restorations. These steps include etching glass with 5% HF acid, coupling glass with silane, adequately etching dentin and enamel, priming enamel, and applying adhesive to enamel before the restoration is loaded with resin cement and is inserted. Examples of such cements would be SpeedCem by Ivoclar (cannot use Multilink Automix Primer and Adhesive), MaxCem Elite by Kerr, and Rely X Unicem II by 3M ESPE.