

Adhesive Dentistry: Materials & Techniques Simplified

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1 Introduction.

Adhesive dentistry allows the dentist to treat teeth in the most conservative fashion. Restorative materials that are bonded to tooth structure not only replaces missing tooth structure due to decay or trauma, but also strengthens and supports the remaining tooth structure without removing healthy tissue.

2 Building a Top Quality Restorative Dental Practice.

- Image
- Education
- Confidence
- Quality care

A fair fee is that fee which the patient is willing to pay without losing their gratitude and which allows the doctor to do their finest dentistry.

3 Adhesive dentistry

- Understand the limitations of the materials.
- Isolation/rubber dam is critical for success.
- Save as much tooth structure as possible with every procedure.
- Always start with very clean tooth structure. Blasting is best.
- Create a manageable zone. Total etch vs. Self/Selective etch.
- Never over dry dentine.
- Always use techniques to lower the curing stress.
- Make sure to completely cure all adhesive materials.

Enamel – 90% Inorganic minerals (Hydroxyapatite), 6% Protein, 4% Water.

Outermost layer of uncut enamel is aprismatic and difficult to bond. Best to roughen or **blast** if working on non-prepped enamel.

The bond is formed by the interactions of many steps but is only as strong as its weakest link.

4 Direct Composite Restorations.

Microfils (reinforced)

High Wear Resistance
High Polishability
Flexure

Hybrids

High Compressive Strength
High Shear Strength
High Cohesive Bond

NanoHybrids/Nanofil

Improved color management.
Improved handling.
Medium strength and polish retention.

Clinical Procedures

1. Take dentin shade from gingival 1/3 of the tooth. (**I use A3 100%**)
2. Rubber dam is high recommended if at all possible.
3. Remove defective restoration and decay. Caries detector.
- 4a. **Total etch** - 37% phos. acid. Split etch technique. 15+ seconds on enamel and 7-10 seconds on dentin. Wash off. Leave moist.
- 4b. **Selective etch** – Only etch enamel surface. Wash off. Leave moist.
5. Hydrate with wetting agent. Blot dry. See list for materials.
6. Cover all the dentin and enamel with a primer from a multiple bottle system and rub lightly for 15 seconds. Lightly air evaporate until movement of fluid stops. Or –
- 6b. If using a mild self-etching adhesive, place the etch/ primer on dentin, rubbing for 15+ seconds and air thin until movement of fluid has stopped.
7. Place the adhesive in a thin layer. If using a highly filled bonding agent, thin out with a dry microbrush. Do not air thin filled.
8. Light cure all areas for 20 + seconds. More if deeper/ further from light source.
9. Line the interproximal cavo-surface & pulpal floor with an A1 flowable and light cure for 40 seconds. Keep this very thin.
10. Place the Hybrid composite using the dentin shade. I only use A3 for a nice dentin shade. Cure each 2 mm increment for 40 seconds.
11. Place pit staining to match existing teeth. Cure for 20 seconds.
12. Place translucent microfil to complete your occlusal surface. (420T) Carve the anatomy and burnish margins with a filled resin wetting agent and cure all surfaces for 60+ seconds.
13. Remove the rubber dam, check occlusion, adjust and polish.
14. Isolate with cotton rolls and etch composite surface and occlusal margins for 10 seconds. Wash and dry well.
15. Place the surface sealer, air thin and cure for 30 seconds

Consideration should always be given to the use of a Glass Ionomer.

Closed Sandwich technique: This technique is used when a glass ionomer is placed in an area where there is no contact with the cavo-surface of the preparation. The material is completely covered with the restorative material. (Base and liners) A liner should be used as a very thin covering over deep and questionable dentin surfaces. A base should be selected anytime the material is placed thicker than .25 mm and should be a high strength GI/RMGI restorative material. Tooth conditioning is elective with this technique.

Open Sandwich technique: This technique is used when a Glass ionomer is placed in an area where there is contact with the cavo-surface on the preparation. The margins of the preparation are sealed with the Glass Ionomer material. A restorative GI/RMGI material should always be used here and the tooth conditioner is indicated.

Class II Open Sandwich: Used when any part of the gingival margin of a Class II preparation has been extended past the CEJ and no longer has an enamel cavo-surface.

1. After placement of the matrix, condition the gingival floor with GI conditioner for 10 seconds and wash off.
2. Place either a pure glass ionomer or a resin modified glass ionomer interprox. to the start of enamel margins. Do not build interproximal or occlusal contact in this material. Make sure that there is a minimum of 2mm of the final restorative material above the Glass Ionomer to support the marginal ridge. Do not over extend.
3. Continue with step 4 with the above composite technique if final material is a composite restoration.

Fiber Reinforcement: If a fracture is observed or there is concern with the strength/ volume of remaining tooth structure, significant strength can be achieved with the placement of a thin piece of resin impregnated fiber or fiber reinforced composite prior to placing the composite. Never allow the fibers or the fiber composite to extend to any cavo-surface margins. This is critical. Always a closed sandwich.

Class V Open Sandwich: Uses when any part of the gingival extension of a Class V restoration extends past the CEJ and no longer has an enamel cavo-surface.

1. Place dry retraction cord and remove all decay. Clean all un-prepped areas to be restored with a pumice mixture.
2. Condition all dentin/ cementum surfaces with GI conditioner for 10 seconds and wash off.
3. Cover all dentin and prepped cementum surfaces with a light-cured RMGI material. A nice technique is to extend this material slightly over the gingival tissue for added isolation. Light cure 40 seconds.
4. Bevel enamel surface and clean all GI from the enamel margins.
5. Etch all surfaces with 37% Phos. Acid for 30 seconds.
6. Place a hydrophobic highly filled adhesive over all surfaces and light cure for 20 seconds. Do not air thin.
7. Place restorative material to final contour and light cure. I like microfils here.
8. Contour and finish Glass Ionomer to the composite and to the root structure.

You may also elect to fill the entire restoration with a RMGI. Less aesthetic but a very good medium term definitive restoration.

Silver Diamine Fluoride with Potassium Iodide. Riva Star.

Restoring with Self Cure Glass Ionomer Cement

1. Isolate area to be treated with a rubber dam if possible.
2. Remove all superficial decay to achieve a 2 mm wall of sound tooth structure around any remaining decay.
3. Apply 37% phosphoric acid for 15 seconds - wash then dry, do not desiccate
4. Using the silver brush provided, pierce through the foil of the silver capsule and carefully apply solution.
5. Immediately after, use green brush provided, pierce through the foil of the green capsule and apply a generous amount of the solution to treatment site. Treatment surface may initially appear creamy white. Keep applying solution until it turns clear.
6. Wash thoroughly with water and air dry, do not desiccate.
7. Place self-cure Glass Ionomer to fill the restoration and allow to set.
8. Contour and polish with water spray.

Restoring tooth with a Resin Modified Glass Ionomer and Composite.

1. Isolate area to be treated with a rubber dam if possible.
2. Remove all superficial decay to achieve a 2 mm wall of sound tooth structure around any remaining decay.

3. Apply 37% phosphoric acid for 15 seconds - wash then dry, do not desiccate
4. Using the silver brush provided, pierce through the foil of the silver capsule and carefully apply solution.
5. Immediately after, use green brush provided, pierce through the foil of the green capsule and apply a generous amount of the solution to treatment site. Treatment surface may initially appear creamy white. Keep applying solution until it turns clear.
6. Wash thoroughly with water and air dry, do not desiccate.
7. Coat all surfaces with a RMGI adhesive. Light cure.
8. Fill the first half of the restoration with a RMGI restorative material. Light cure.
9. Wet the area with the RMGI adhesive again. Do not cure.
10. Fill the remaining area with a resin composite. Light cure
11. Contour and polish with water spray.

5. Indirect Tooth Colored Bonded Restorations.

Materials used by the presenter most of the time for Indirect.

IPS Empress I. Leucite-reinforced glass ceramic.

eMax: Lithium disilicate pressed ceramic system.

Zirconia: 100% milled Zirconia full contour or layered.

Immediate Dentinal Seal (Tested w/ Optibond Fl, Clearfil SE or Protect Bond))

Used to seal all dentin exposed in the preparation at the time when the dentin is freshly cut. **Should always be done before impression is taken.**

1. Isolate with rubber dam and complete the onlay preparation.
2. Blast preparation well prepare the surface for the seal.
3. If using OptiBond Fl, etch dentin for 10 seconds. If using SE, no need for the etching step since only sealing the dentin.
3. Place a MMP inhibitor (Gluma or Consepis), allow to soak for 60 seconds and blot off all remaining visible liquid.
4. Place multiple coats of the primer, use a light scrubbing action for 15 seconds and air evaporate until movement of fluid stops.
5. Place the bond/adhesive. Thin out with a clean dry micro brush. Do not use air. Cure well. If using SE products or wishing to block out an area, place a thin layer of flowable resin. Light cure.
6. Place a glycerol gel over all and cure again to remove uncured layer.
7. Freshen all enamel margins with a fine diamond.

Margin Elevation Technique

Can be used if any part of the preparation has extended to any area that may make impressions or the isolation for the cementation difficult. Can be used to block out areas of replace existing restorations to allow for the most conservative preparation possible. Example would be a cavo-surface

undercuts or deeper interproximal area. The final margins are on the composite material.

Deep margin elevation refers to any area with no enamel remaining. Careful consideration should be used with this technique.

1. Isolate area with rubber dam and place **modified** convex circumferential matrix band around tooth. If an IP area does not have a tight seal, use teflon tape, superfloss or a modified wedge so as to not interfere with a good emergence profile. **Greater Curve Matrix works the best here and would rarely need a wedge.**
2. Use all adhesive steps outlined above for I.D.S. Use the total etch for OptiBond FL and the selective etch for the SE products since there will be enamel treated for this procedure.
3. Place high strength hybrid composite and cure well. **I prefer Vit-1-escence or AP-X. Always complete a second cure with all areas covered with a glycerol gel.**
4. Prepare area to make your final margin.

My ultra conservative temporary technique. (UCTT)

If the prep has some retentive features, I will make a traditional temp and cement with Duralon. If the prep is ultra conservative with little to no retention features, I will use the following temp technique.

1. Best used only with preparations that have I.D.S. Isolate area well.
2. Spot etch a small area in the middle of the prep with Phos acid for 5 sec.
3. Wash and place purple tented Luxaflow temp material. Cure.
4. Place yellow teflon tape inter-prox to protect tissue and allow access.
5. Inject Luxa-Crown material into pre-op impression and fully seat.
6. Remove impression after complete set, remove teflon tape and clean excess material with surgical #12 blade.
7. Check occlusion/ polish. Instruct patient not to floss through contacts.
8. TempOff (artcraftdental.com) best for removal at delivery appt.

*****I have observed occasional open contacts in the definitive restoration when used on the most distal tooth if a single unit. I have eliminated this by spot etching the distal contact on the mesial tooth as part of the above technique.**

Centric Occlusion Restorative Procedures

Patient care

1. Full mouth impressions with mandibular closed as much as possible.
2. Wax bite (Delar) only where clearance allows with patient biting completely together in centric occlusion. Earbow for mounting.
3. Record in chart all teeth that hold shim stock.
4. Fabricate a temporary with interproximal contacts and in occlusion.

Laboratory care

5. Pour solid upper and lower models in model stone. Use split cast for upper if you are not using magnetic mounting plates. Mix all model stone in vacuum mixer.
6. Carefully examine models and remove all bubbles in pit and fissure area.
7. Set up and mount upper model with ear bow and snow white #2 stone.
8. Try wax bite on both models and trim so no wax is contacting tissue.
9. Stabilize mandibular model and wax bite to maxillary model.
10. Check mounting with split cast. Remount if this does not check.
11. Using shim stock, check occlusal holding points. If it matches the intra-oral records, you are good to go. If not, mark with indicator spray and equilibrate until it matches. Be careful not to over equilibrate. If there is a question, less is better than more. **I find this step to be faster if I remove all the occlusal tables of all maxillary teeth distal to the cuspid on the opposite side of the prepped teeth.**
12. Send mounted models and articulator to lab with preparation impression.
13. When case returns, place restoration on die model and check margins.
14. Now place restoration on solid mounted model and check interproximal contacts and occlusion. All teeth that contact should match your intraoral records. If not adjust, polish and re-glaze if indicated.
15. You are ready for the easiest cementation procedure ever!
18. If metal restoration, cement with glass ionomer cement. If non-metal restoration, bond with resin cement.

Cementation for IDS, MET or fiber placement technique and cementation for 100% light penetrating onlay. Porcelain/eMax material 4 mm or less.

*****My outlined technique is best used with either OptiBond FL, ClearFil SE or Protect bond.**

1. Remove temporary.
2. Place the rubber dam.
3. Clean the tooth. Confirm removal of all temporary material from the spot etch areas. **Blasting of the tooth is very important to clean the surface and prepare the cured composite layer for adhesion. I recommend 2 bar pressure, 45 degree angle, 10 mm distance. IDS - 2 seconds and existing comp restorations - 5 seconds.**
4. Try in ceramic restoration and check margins and interproximal contacts. With the above outlined temporary and mounting procedures, I do not check occlusion until after final placement.
6. Prepare restoration for adhesion. Refer to section 6 below for best material adhesive treatment procedures.

7. Place fender wedges, wedge guards or teflon tape to isolate adjacent teeth from Phos. acid etch contact. This will allow for very easy inter-proximal clean up and flossing after restoration placement.
8. Etch tooth with Phos. Acid using either total etch for 30 seconds (OptiBond FL) or selective etch (Clearfil SE or Protect Bond.)
9. I will always use ideal dentin treatment again at this step in case the blasting did expose any areas of dentin. I will place a MMP inhibitor (Gluma or Consepsis), allow to soak for 60 seconds and blot off all remaining visible liquid.
10. Place multiple coats of the primer, use a light scrubbing action for 15 seconds and air evaporate very well until movement of fluid stops. I will add the extra step of using the heat from the light curing unit to aid in complete evaporation of the solvent. **Complete solvent evaporation is critical with this technique.**
11. Apply a thin layer of the adhesive in the restoration. **Do not light cure.**
12. Place warmed hybrid composite in the restoration or in the preparation. **(AP-X, HRi or Herculite XRV.)**
13. Seat restoration and maintain pressure while cleaning as much of the cement as possible with a rubber tip. Spot cure on the facial margin with 2mm light to tack down. Clean interproximally with superfloss. Do not ever run floss through the inter-proximal contact for risk that you may move the restoration. Just get the embrasure area under the contact very clean. Complete a short cure of all areas.
14. Place glycerin over all margins prior to final cure.
15. Cure for 1 minute from each surface.
16. Remove the rubber dam, check occlusion, adjust and polish with polishing points. Open contacts with separating disc.

6. Material treatment –

Indirect composite (Milled composite block)

1. Sandblast with Co-Jet for 10 seconds.
2. 37% Phosphoric acid for 15 seconds. Ultrasonic Bath with Ethanol.
3. 2 applications of Silane coupling agent for 60 sec each and dry
4. Warm dry with AdDent warmer for 5 min.
5. Hydrophobic adhesive on the warmed restoration.

Porcelain (Already sandblasted and etched at lab with hydrofluoric acid).

1. Do not place on stone dye yet.
2. Etch with 37% Phos. Acid for 15 seconds.
3. Ultrasonic bath with distilled water 4 minutes and dry well.
4. Silane coupling agent for 60 seconds X 2 followed by heat dry.

6. Try-in on dye and tooth.
7. Clean well with Acetone and dry.
8. Place in warming tray and 1 additional coat of silane.
9. Hydrophobic adhesive on the warmed restoration.

Porcelain (Only Steam cleaned in lab). **Ideal treatment.**

1. Try-in on dye and tooth.
2. Air abrasion with glass beads only. **Do not use AO particles.**
3. HFL with recommended strength and time from manf. If unsure – 60 seconds with 9.6% Buffered HF acid. **For Lith Dical – 20 sec.**
4. Etch/scrub with 37% Phos. Acid for 15 seconds. Wash and dry.
5. Place in warming tray, silane coupling agent for 60 seconds X 2 and heat dry.
6. Hydrophobic adhesive on the warmed restoration.

Zirconia (Layered or full contour.)

1. After try-in, clean with a Zirconia cleaning agent. (Ivoclean, Zirclean.
2. Air abrasion. I prefer Co-jet/Sil jet. 10 sec, 30 psi, 10 cm away.
2. Place a Zirconia primer on restoration. (Z Prime +, Clearfil Ceramic primer).
3. Cement with either resin or RMGI cement. I prefer RMGI.

Re-attachment of tooth using OptiBond Fl. *Does not work as well with single bottle DBA.

1. Keep tooth fragment wet at all times. If patient did not keep wet, place in distilled water for 15+ minutes prior to starting.
2. Isolate with rubber dam and clean prep with chlorahexidine rinse.
3. Try-in for a passive fit and evaluate fit for missing fragments.
4. If large areas are missing, will also need a high strength comp.
5. Etch all tooth structure (both fragment and intra-oral area) with 30% -40% phos. acid. Split etch technique. 15+ seconds on enamel and 7-10 seconds on dentin. Wash off. Leave moist.
6. Hydrate with wetting agent. Blot dry.
7. Place the dentin primer using several layers on both areas. Allow to saturate for 15 seconds. Lightly air evaporate until movement of fluid stops. Light assist 10 s.
8. Place a filled bonding agent on both pieces and thin with a dry brush. Make sure to cover all surfaces. Add warm composite for missing areas of tooth if needed.
10. Seat tooth fragment and maintain pressure while cleaning as much of the excess as possible. Clean inter-proximally with superfloss or rubber tip.
11. Place glycerine gel over all margins prior to final cure.

12. Cure for 1 minute from each surface.
13. Remove the rubber dam, check occlusion, adjust and polish with polishing points. If you can see the fracture line, prep a chamfer over the line and place a direct composite to cover area.

7 Porcelain Veneer Preparation.

1. Diagnostic wax-up.
 - Know where you are going. Final length & general shape.
 - Make putty impressions for reduction guides. Look at incisal and axial reductions.
2. Depth cuts.
 - Three plane reduction.
 - More reduction at body of tooth (0.5mm -1.0mm).
 - Less at gingival finish line (0.3mm)
3. Facial reduction.
 - Maintain contour of finished restoration.
 - Keep margins 1.0mm supra-gingival at this point.
4. Retraction.
5. Interproximal elbow.
6. Finish and smooth facial finish lines.
 - Lower 0.5mm.
7. Incisal reduction.
 - 1.5mm - 2.0mm below determined length of the completed restoration depending on amount of translucency desired.
8. Lingual finish lines. -Better to wrap over incisal edge, but do not create a chamfer. A butt joint introduced much less stress to the porcelain.
9. Remove any remaining old restorations.
 - Block out any undercuts with a hybrid composite.
10. Open contacts very slightly.
11. Round all angles.
12. Clean preparations and take full arch impressions.
13. Good communication with the lab is critical. Color mapping, stump shade, final length, smile design, canting, occlusal notes and photos. Earbow parallel to eye level and photo is very helpful for cant. FACE smile guide may be used here very well.

8 Veneer Cementation

1. Confirm fit, shape, length, desired shade and occlusion on the articulated model work.
2. Anesthetize patient, remove temporaries and clean off all remaining cement with instruments and a cleaning paste.
3. Try in each restoration individually with water to confirm fit.

4. Use a clear try-in paste and seat all together. Start with #8 and #9 then follow the same placement sequence as you will use for final cementation. Adjust contacts if needed at this point.
5. If only slight color modification is required on one or more restorations, try a colored try-in paste at this time.
6. Seat patient up to verify cant and overall appearance of the restorations. When you are pleased, walk patient to a full face wall mounted mirror with adequate light to view the new smile. Address major concerns now leaving only minor contour changes for post cementation adjustment.
7. Remove the restorations and place back on the model work for tooth identification. Each tooth should be washed with water, dried and a labelled carrying stick attached.
8. See above for porcelain treatment.
9. Isolate teeth with a rubber dam and bite registration paste.
10. Placement of 8 and 9 only at this time.
11. Place Teflon tape around #7 and #10 to isolate.
12. Etch teeth with 35% phosphoric acid and rinse.
13. Apply a wetting agent with a microbrush and blot off excess.
14. Apply the primer material to the teeth, allow to saturate for 15 seconds, dry with clean light air and light evaporate 10 sec each.
15. Place solvent free adhesive and base only cement or warm hybrid comp on the restorations. Dr places solvent free adhesive on teeth. Place restorations on #8 and #9, being careful to remove excess material from around the margins. While applying axial and apical pressure, spot tack the gingival margin for 10 seconds with a 2mm light probe.
16. Remove any observed cement with a rubber tip and super floss and place glycerol gel on all margins and cure completely.
17. Clean all excess cured resin with a #12 BP and finishing burs being careful to not cause bleeding.
18. Try in next two restorations and when fit is confirmed, repeat above steps.
19. Check and adjust occlusion for cuspid guidance in lateral movements, balanced lateral and central guidance in protrusive movements and shim stock clearance in centric position.
20. Without great force, check interproximal contacts for cement. If excess is detected, try a ProxiDisc, interproximal saw or finishing strips. I will not apply too much pressure here. If a contact is frozen, do not force it, send patient home and check at 1 week follow-up.
21. Polish all margins with finishing and polishing points.
22. Sit patient up and contour any teeth for desired appearance.

9. Porcelain repair (no tooth structure or metal exposed.exposed)

1. Pick base shade with mock build-up, cure and fab putty matrix.
2. Isolation with a rubber dam.
3. Place a 2mm bevel 360 around porcelain fracture.
4. Protect all glazed porcelain with opaldam. (Ultradent)
5. Mirco-etch all exposed porcelain with co-jet spray for 10 seconds.
6. Etch all exposed porcelain with 9% buffered HFL acid for 20 – 90 s.
7. Etch guide – Felspathic 90 s. Lucite pressed – 60 s. Lith Di – 20 s.
8. Wash well and scrub area with 37% H3PO4 for 15 seconds.
8. Remove all opaldam and wash area well.
9. Dry with warm air from blow dryer.
10. Place 2 coats of fresh silane. Each coat should be 1 layer with a 1 minute waiting time followed by soft air dry. After last layer and waiting period, dry with warm air from the blow dryer for 60 sec.
12. Place 1 coat of a filled solvent-free adhesive over all the etched porcelain and light cure for 20 seconds.
13. Using the putty matrix, layer the composite for the desired esthetic result.

Porcelain repair with metal/zirconia exposed.

1. Isolation with a rubber dam.
2. Remove any unsupported porcelain from the metal.
3. Protect all porcelain with opaldam. (Ultradent)
5. Mirco-etch all exposed metal/ Zir with co-jet spray for 10 seconds.
6. Apply metal/ Zir primer over the metal only and air dry.
7. Apply a filled adhesive on the metal only. Light cure. Best to use probe to apply.
8. Place metal opaquer over all exposed metal and light cure. Place a thick enough layer to be blasted.

Now follow the exact steps listed above for a standard porcelain repair. Lightly blast the opaque metal without removing the opaquer.

Fracured porcelain repair (tooth structure exposed) If you are going to use HFL acid, it can not come in contact with enamel or dentin.

1. Isolate area well with rubber dam.
 2. Etch tooth structure with 37% Phos. Acid for indicated time.
Dentin: 7-10 seconds. Enamel 15-30 seconds.
 3. Place dentin primer over exposed dentin. OK to get on enamel.
Air evaporate and light cure.
 4. Place adhesive over all dentin and enamel and light cure.
- Now follow the exact steps listed above for a standard porcelain repair.

11. Tissue Predictability.

The effect of the distance from the contact point to the crest of bone on the presence or absence of the interproximal dental papilla. Tarnow, Magner, Fletcher. J Perio 1992; 63 (12): 995-996.

	<u>Bone to contact.</u>	<u>Complete Papilla.</u>
Tooth -	4.5-5mm	100%
Tooth	6mm	56%
	7mm	27%

The inter-proximal height of bone: a guidepost to esthetic strategies and soft tissue contours in anterior tooth replacement. Salama H, Salama MA, Garber DA, Adar P. 1998 Practical Periodontics and Aesthetic Dentistry.

<u>Restorative Environment</u>	<u>Proximity Limitation</u>	<u>Vertical Soft Tissue Expectation</u>
Tooth- Pontic	N/A	6.5mm
Tooth- Implant	1.5mm	4.5mm
Pontic- Pontic	N/A	6mm
Implant- Pontic	N/A	5.5mm
Implant- Implant	3mm	3.5mm

11. Anterior implant protocol.

1. Start with the fabrication of a one-piece screw retained temporary crown. Always avoid a cement junction around implants when possible. Adjust emergence profile from fixture level to contact point for ideal tissue shape.
2. Allow tissue stability around the temp for 3-6 months prior to final abutment and crown fabrication.
3. Remove temporary crown and attach lab analog.
4. Submerge this into an impression material past the area of interproximal contact on the crown. May want to secure the analog with composite as first layer before impression material.
5. Mark the facial side of the tooth on the impression. Unscrew the temporary crown from the analog and attach an open tray fixture level impression coping. Image to check seat.

6. Inject self-cure composite around impression coping up to level of impression material.
7. Unscrew from impression, place in mouth, image for seat and capture open tray full arch impression.
8. Unscrew from mouth, attach lab analog and pour up using dye stone. **Do not use PVS pink gingival pour up material.**
9. When making and checking the complete abutment, confirm good fit with no space between the stone and material.

12. Passive impression technique (PIT).

Designed for full arch impressions and should not be used for triple tray bite style impressions.

****I have only preformed this technique using Affinity impression material. Its physical properties are well suited for this technique. I cannot recommend any other material to be used with this technique until further lab test are completed with other material.

1. Complete the preparation indicated for the restoration to be placed.
2. Size the full arch tray and place tray adhesive.
3. Complete all tissue management techniques to establish a clean, dry field with all margins easily accessible.
4. I prefer to use a prep cleaner prior to removing cord. Lightly scrub the entire prep with a thin layer prior to removing the first cord. After removing the cord, I wash the prep thoroughly and dry well.
5. With tongue and check isolation devices in place, inject Affinity Light Body XL completely around prep and margins. Make sure to cover the entire prepped area. Allow wash material to set for 5 minutes.
6. Fill tray with Affinity Heavy Body and place a layer of Affinity Light Body XL over the top.
7. Carefully remove the isolation devices and place a thin layer of Affinity Light Body XL over the occlusal surfaces of all the teeth and the set material over the prep.
8. Seat the full arch impression tray and allow to set for 6 minutes.

13. Dental Materials

Multiple Bottle Systems

- All Bond II (Bisco)
- Optibond FL(Kerr)*
- Scotchbond Multipurpose Plus (3M)*
- PermaQuik (Ultradent)*

Universal Adhesives

- Scotchbond U (3M)
- All Bond U (Bisco)
- Clearfil U (Kuraray)
- Peak U (Ultradent)

Single Bottle Etch & Rinse Systems

- MPA (Clinicians Choice)
- OptibondSolo Plus(Kerr)
- PQ-1 (Ultradent)*
- OneStep plus (Bisco)
- Prime & Bond (Caulk)

Hybrid/MicroHybrid Composites

- APX (Kuraray)*
- ENA HRi (SYNCA)*
- Vit-l-escence(Ultradent)*
- Gradia (GC America)*
- Herculite XRV (Kerr)*

Nanofil Composites

- Filtek Supreme Ultra (3M/ESPE)*
- Estelite Omega (Tokuyama)*

Flowable Composites

- Majesty flow (Kurararay)*
- Perma Flow (UltraDent)*

Bactericidal Agents

- Consepsis (Ultradent)*
- G5 (Clinicians Choice)*
- SuperSeal (Pheonix Dental)
- MicroPrime Gluma or BC Unidose (Danville)
- Gluma Desensitizer (Heraeus Kulzer)
- UltraCid F(Ultradent)*
- Tubulicid Red (Global)
- Sodium Hypochlorite 5.25%*

Fiber Systems (Direct)

- Ribbond (Ribbond, Inc.)*
- Ever X flow (GC)*
- Dentapreg (Cosmodent)*

Resin Cement Systems

- Variolink II (Ivoclar-Vivadent)*
- Nexus (Kerr)*
- Panavia V5 (Kuraray)*
- RelyX (3M)
- Insure (Cosmodent)
- Duolink(Bisco)*

Provisional Material

- Inspire (Clinicians Choice)*
- Integrity (Caulk)
- Luxatemp/Crown (DMG)*
- MirrorImage (Cosmodent)*
- TurboTemp(Danville)

Self-etch Adhesive

- Clearfil SE (Kuraray)*
- OptiBond XTR(Kerr)*
- Peak SE (Ultradent)*
- Protect Bond (Kuraray)
- All Bond SE (Bisco)

Microfil Composites

- Durafil VS (H K)
- Heliomolar RO (I V)*
- Renamel(Cosmodent)*

Composite Stains

- Tints (Cosmodent)*
- Kolor Plus (Kerr)*

Glycerin Gel

- De-Ox (Ultradent)*
- Liquid Strip (I V)*
- Liquid lens.

Caries Detector

- Caries Finder(Danville)
- Seek (Ultradent)*

Temporary Cements

- Duralon (ESPE)*
- Cling 2 (Clinicians C)
- UltraTemp (Ultradent)*
- Neo-Temp (Teledyne)*
- Fuji Temp (GC)*

Indirect Pulp Capping

- Fuji IX Ex(GCAmerica)*
- Fuji liner (GC America)*
- FujiIILC(GCAmerica)*
- Triage (GC America)*

Post Systems

- Unicore (Ultradent)*
- Post (Bisco)*
- Ribbond (Ribbond)*
- Pinpost (Cosmodent)*

-Polishing points

- Astropol (Ivoclar-Vivadent)*
- A.S.A.P. (Clinicians Choice)
- Diacomp & Dialite (Brassler)*
- Jiffy points & Brushes (Ultradent)*

Composite Sealant

- OptiGuard (Kerr)*
- PermaSeal(Ultradent)*
- Fortify (Bisco)

Polishing paste

- Composite Paste (Ultradent)*
- Proxyt (Ivoclar-Vivadent)*
- Luminescence (Premier)*
- Renamelize (Cosmodent)*

Rubber Dam Supplies

- IsoDam (Darby)*
- Wedjets (Hygenic)*
- Clamps (Hygenic)*

C&B Cements

- Riva Plus (SDI)
- Fuji Plus (GC America)*
- Meron Plus AC (Voco)*

Finishing Disc

- Softflex(3M)*

Silane

- Ceramic Primer(Kuraray)*
- Bis-Silane (Bisco)*

Etching Material

- GelEtch 35% (Temrex)
- Gel Etchant 37.5% (Kerr)*
- Ultra-Etch 35% (Ultradent)*
- Total Etch 37% (Ivoclar-Vivadent)*

High Tec

- DIAGNOdent*(Kavo)
- Electric handpiece*
- Easyshade(Vita)*

Matrix System

- Palodent Sectional Matrix with Bi Tine Ring (Darway)*
- Composi-Tight Gold & Flexiwedge* (GDS) (888) 437-0032
- Convexi-T (Clinicians Choice)*
- Triodent matrix system (Ultradent)*
- Greater Curve matrix (Greatercurve.com)*

Liners

- Fuji Fill LC (GC America)*
- Triage or Protect (GC and SDI)

Bases/restorative material

- Fuji IX GP, Fuji IX Forte HT) & Fuji II LC(GC America)*
- Ketac Universal & Photac Fil (3M/ESPE)*
- IonoStar Plus & Ionolux (Voco)*
- Riva Selfcure HV & Riva Light Cure HV (SDI)*

Desensitizer

- Gluma Desensitizers (Heraeus Kulzer)*
- G5 (Clinicians Choice)*
- Hemaseal & Cide (800) 388-6319
- MicroPrime Gluma or BC Unidose (Danville)

Impression Material

- Affinity (Clinicians Choice)*
- Aquasil Ultra(Caulk)
- Impregum Soft (ESPE)*

Metal Opaquer

- IPS Direct Opaq (Ivoclar)
- Sinfony Opaquer (3M/ESPE)*

Unidose syringe tips

- Transport(Clinicians choice)
- Imprint Intra-oral tips(3M/ ESPE)
- Mojo II (Danville)

Prep cleaning material

- Detail (Clinicians Choice)

Direct pulp capping

- TheraCal(Bisco)* and Biodentine (Septodont)*

Metal/Zirconia primer

- Z Prime +(Bisco)*
- Ceramic Primer(Kuraray)*

Zirconia cleaner

- Ivoclean (Ivoclar)*
- ZirClean (Bisco)*

Temporary Matrix

- Wax Buttons (Advantage Dental Products, Inc)* (800) 388-6319
- Template PVS (Clinicians Choice)*

Air Abrasion systems

- Microetcher* (Danville & Ultradent)
- Aquacare unit* (Velopex International) – 407 957-3900
- PrepStart* (Danville) CrystalMark (Crystalmark Dental)
- Etch Master* (Groman Dental)* Unidose system.

Air abrasion particles

- 27 micron AO (Danville, Ultradent, AquaCare and Groman)
- 50 micron AO (Danville, Ultradent, AquaCare and Groman)
- 50 micron Glass beads (Danville, Ultradent, Rolloblast)
- Soduim Bicarb(Danville, Aquacare and Ultradent)
- CoJet(3M/ ESPE and Groman)
- Siljet(Danville)
- MicroCab(Danville) is a must have in the lab.

Burs

- Brasseler Brucia bur kit.*
- Preparation Diamonds (Brasseler)*
845KR-018, 10839-31-016, 849L-009, 330D, 6847K-016,
701D-012
- Finishing Burs (Brassler)*
8855-012, 7003-012, 8274-016, 7104-014, 38011-52,
H48LF-012
- Tapered flat end white stone friction grip TC-1 (Shofu)*

Other Must Have Items

- C-Saw kit for removing interprox overhangs. (Danville.)
- TempOff – (Artcraft Dental.)
- Cerisaw (Den Mat)*
- Interprox contact opener White (Axis)*
- Isolite (Isolite systems)
- Compo-Shield (Practicon, Inc)* (800) 959-9505
- Logi Block (Common Sense Dental)*(888)853-5773
- Flexiwedges(Common Sense Dental)*(888)853-5773

- Swe-Flex (Hager) Dealer or (800) 328-2335
- RuberDam Clamps (Hygenic)* 12A & 13A
- Blow dryer (Great Lakes)*
- 9% buffered HFL (Ultradent)*
- Fender wedges – (G.D.S.)*
- Wedgeguards – (Ultradent)*
- Borderlock trays (Clinicians Choice)*
- AdDent warmer & tray - (AdDent)*
- Veneer Me wash tray – (Smile Line)*
- Toothmate - Excellent root desensitizer (Kuraray)*
- Feather(Ultralight Optics)

Direct placement Fiber systems

- | | |
|--------------------|--------------------------------|
| Ribbon – Ribbond.* | Dentapreg – Cosmodent* |
| Grand Tec – Voco.* | EverX Post flow – GC America.* |

Magnification

- Orascoptic Research* 800 369-3698
- Global microscopes.* 800 688-8376

Articulators & Earbow assemblies

- Basta I and Basta II (FACE)* -SAM III system (Great Lakes)*

Occlusion supplies

- Bite registration wax and sheets (Delar)* 800 669-7499
- Split cast formers (Delar)* 800 669-7499

Labs used most often by Dr. Jeff J Brucia for his clinical care.

Prestige - Silke (415) 885-3335 CMR (208) 523-3401
Custom C&B (408) 252-8185

***These are the materials used in the presentation. I believe that all of the above materials are excellent and there are many more excellent materials that I have not had the opportunity to work with clinically. Go do it! Have fun and take pride in every restoration that leaves your office.**

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