

Anterior and Posterior Aesthetics

Stephen D. Poss DDS

The following pages contain a summary of information designed to assist you with the armamentarium, preparation, and cementation of anterior aesthetic restorations. This will include preparation design, adhesives, and dental materials used to complete these aesthetic restoration

Sponsored: by Dentsply/Caulk

Adhesive Dentistry

Total-Etch (rinse) → 2 bottles Primer + Adhesive 4th



Total-Etch (rinse) → 1 bottle Primer + Adhesive 5th



Self-etch (no rinse) → 2 bottles Primer + Adhesive 6th



Self-Etch (no rinse) → 1 bottle Primer + Adhesive 7th



*Universal Adhesives → Phosphoric acid Optional 8th?

Important Qualities of An Adhesive:

- Lack Of Sensitivity
- Handling
- Bond Strength
- Simplicity

Ten main causes of sensitivity

- 1.) Not using a rubber dam
- 2.) Over etching the dentin (10-15 sec.)*
- 3.) Over drying the dentin*
- 4.) Incomplete caries removal
- 5.) Improper curing (Check your lights)
- 6.) Improper use of bonding agent
- 7.) Not using an antibacterial agent BEFORE etching
- 8.) Using too large increment of composite
- 9.) Not using a wetting agent before placing an adhesive and/or puddling it on the tooth (Too much)*
- 10.) Occlusion

* Usually associated with the total-etch technique

Total Etch vs Self Etch

Total -Etch 32-37% phosphoric acid monomer

Self Etch acidic

Total -Etch 32-37% requires rinsing rinsing

Self Etch acidic no

Total -Etch 32-37% could over etch possible to over etch

Self Etch not

Self-Etch No sensitivity does not necessarily mean restoration properly done. The application procedures can greatly influence performance more so than total-etch

Self-Etch ability to bond to unground enamel lower than total – etch

Total-etch Chlorhexidine applied as wetting agent can preserves longevity of adhesion

Caution! Adding disinfectant to water supply can decrease bond strength up to 22%

Very important that solvents in bonding agents be evaporated because if not there is the dilution factor

If using air a gentle breeze about 1cm away also evaporate reduces film thickness 5+ seconds

Always shake bottle or unidose before use because separation of components

Total Etch Technique

Clean with chlorhexidine 15 seconds and rinse

Place 30%+ phosphoric acid on enamel first and then drop down to the dentin do not leave on dentin more than 15 seconds then rinse

Apply Prime & Bond Elect for 20 seconds, air thin, light cure

Place Composite/restoration

Universal Adhesive Technique

Clean with chlorhexidine 15 seconds rinse and dry

Optional full etch, partial etch, no etch
Apply Prime and Bond Elect to the to the prepared enamel/dentin 20 seconds

Light cure

Place Composite/restoration

Class I & II Composite Prime & Bond Elect Universal Adhesive

- Clean preparation with Chlorhexidene 15 seconds and rinse
- If considering etching place phosphoric acid on surfaces desired. Start with the enamel and then place on the dentin. Do not etch dentin more than 15 seconds.
- Place universal adhesive like Prime & Bond Elect
- Evaporate the excess solvent off and cure 10 seconds
- Depending on the depth place up to 4mm of a flowable SureFil SDR and cure.
- Add final layer (occlusal) up to 2 mm in TPH Spectra (If Class II use Palodent Plus matrix system to maintain a tight contact) Cure each increment twenty seconds.
- Use various polishing points and cups to polish (Enhance or PoGo)

Self-Etch Class I and Class II

- Clean the preparation with Chlorhexidine
- Apply self-etch adhesive like Prime and Bond Elect for 20 seconds scrubbing the preparation gently.
- Evaporate the solvent off the preparation
- Evaporate the solvent
- Light cure 10 seconds
- Place composite and matrix system like total-etch like above

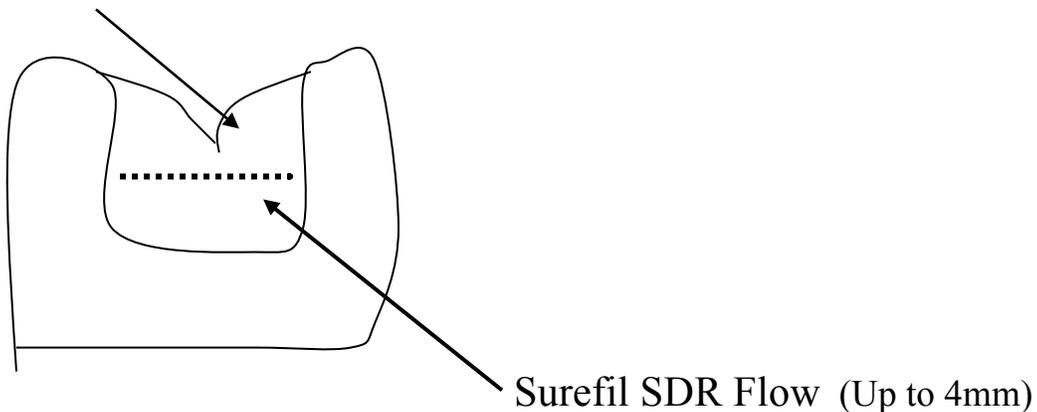
ChemFil Rock (Zinc-reinforced glass ionomer)

- No Cavity Conditioning
- Semi-permanent restorative for Class I and class II
- Deciduous teeth
- Class V
- Base/core build-up
- Self-adhesion and self-cure

Direct Composites

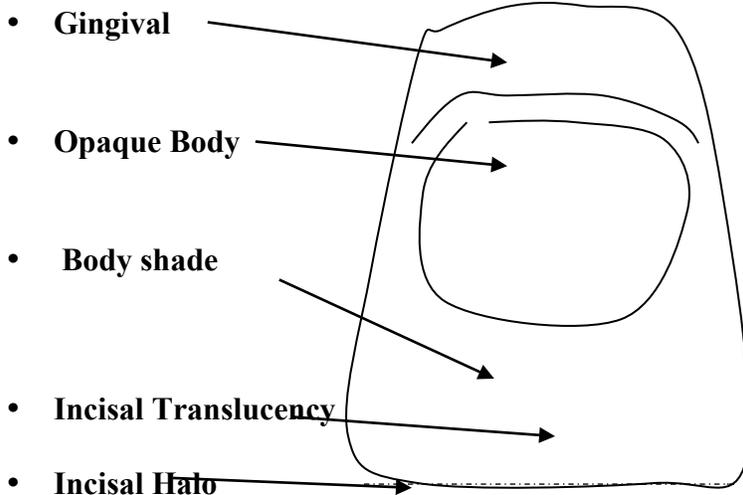
Class I & II

Enamel Shade (TPH Spectra)



Palodent Plus matrix system for class II

Anterior Direct Composite



The following are just guide -lines to what different shade segments to a tooth:

Gingival: Generally 1-3 shades lower in Value than the incisal. Unless there is decay or doing a full veneer this portion of the tooth is not usually affected.

Opaque Body: This portion is usually in the center of the tooth more in a gingival direction. There is usually replaced in a severe class IV. Clinician should use caution not to place too much of this or the tooth will look too bright. Usually there is a body shade and/or translucency that is layered over this.

Incisal Translucency: Generally younger people have more of this and as you age there is less. If doing a class IV this is determined what the surrounding teeth look like. Depending on the tooth there could be some body shade in “Lobes” with translucency layer over it.

Incisal Halo: In a small percent of the population there is a “halo” this is enhanced by the translucency especially in young people. Tints, or an incisal shade can be used in very small amounts usually encompassed with translucency.

Keep the above anatomical shades in mind when replacing anterior tooth structure. Also the facial surface anatomy or texture is very important. No matter how perfect of shade match that is done it is critical to match the surface anatomy.

Composite like Esthet X and TPH Spectra work well with composite veneers

Factors in Smile Design

The Proportion of the Centrals

The centrals are the cornerstone of the smile. As the most prominent feature, much of the esthetics of a smile is based on the proportion of these teeth. The ideal width to length ratio is around 75% - 80%, with the tooth being longer than they are wide. In other words, if the tooth is 10mm long, it should be 7.5mm to 8mm wide.

The Golden Proportion

What are the golden proportions? If the laterals are a factor of one, the centrals are 1.618 the size of the laterals (looking straight on from the front) and the laterals are .618 the size of the centrals. So if the laterals are viewed as 6mm looking two dimensionally straight from the front, the centrals should appear 9.5mm and the cuspids 3.5mm.

Midline and Canting

The midline should be placed in the middle of the face and perpendicular to the plane between the eyes. The plane of the maxillary arch should be parallel to a line drawn through the eyes.

Axial Inclination

The esthetic smile has teeth that have a slight mesial inclination of the vertical incline. This is a line drawn from the gingival apex to the center of the incisal edge or incisal apex with the cuspids. The centrals are the straightest to the midline with a gradually increasing mesial inclination back to the first bicuspid. From the first bicuspid back, they all have same inclination.

Lip Line vs. Incisal Edge

In a natural smile, the incisal edges should follow the contour of the lower lip. If there is a distance between the lip and teeth, it should be approximately the same distance back to the cuspids or first bicuspid.

Contact Points

The contact points gradually decline gingivally as you move posteriorly. The contact point of the centrals is closer to the incisal edge than the contact point between the laterals.

Length of Teeth or Gradation

The teeth get shorter from the cuspids back. The first bicuspid is shorter than the cuspid, the second bicuspid is shorter than the first, and the first molar is shorter than the bicuspid.

Arch Form

If you were to draw a line on an occlusal view of an arch from cuspid to cuspid, in 92% of the people that line would dissect the incisive papilla. Using that as a guide, you can determine the natural curvature to an arch.

Gingival Symmetry

If gingival tissue is exposed upon smiling, it is imperative that the gingival height of the corresponding teeth on each side be symmetrical. If the lips cover the gingival level of the teeth, then this can be ignored without an esthetic consequence.

Gingival Height or Contour

If you were to draw a line from the gingival height of the central to the gingival height of the cuspid, the lateral gingival height would be 1 - 2mm below that line. Interestingly, the gingival zenith on the laterals is most appealing if right in the middle of the long axis of the tooth, where the centrals and cuspids should be slightly distal to the long axis.

Evaluating these rules and conditions upon smile analysis and design will lead to a more pleasing result for you and your patient. Many times they will not like their smile without realizing why, when it could be a violation of one of these esthetic principals.

Porcelain Systems and Cementation

Pressed Ceramics

- IPS Empress @200MPa+ when bonded in very aesthetic crowns and veneers, inlays and onlays
- Finesse All –low fusing porcelain similar properties as Empress Crowns veneers inlays, onlays
- Preparation: 2mm occlusal .5mm + for veneers/crown on facial

Zirconia

- Cercon 900MPa + Crowns, large bridges can not etch internal aspects of framework Can create entire arches with proper support Best if not more than 2 pontic between abutments
- Lava 900MPa + Crowns, large bridges can not etch internal aspects of framework Can be very esthetic. Multi-unit bridges can be fabricated.
- ZirPress Pressed ceramics onto zirconia framework limited size due to pressing
- Monolithic Zirconia Solid zirconia that is stained only. No layering porcelain.

Lithium Disilicate E-Max/ Lithium Silicate (Glidewell)

- E Max Pressed @ 400 MPa single crowns, premolar bridges
- E max Cad/Cam @360 MPa mainly single crowns
- Lithium silicate (Glidewell) 375MPa Crowns veneers anterior bridge work
- Preparation 2mm occlusal .5+mm facial

Cementation Options

Pressed Ceramics/Feldspathic Porcelain?

- Total Etch with Light cure resin cements
- Universal adhesives (Prime & Bond Elect) with light cure/dual cure resin cements
- Self-etch adhesive resin luting cements
(Not recommended)

Lithium Disilicate (E-Max)/Lithium Silicate (Glidewell)

- Total Etch with Light cure/dual cure resin cements (Calibra)
- Self-etch adhesives Prime & Bond Elect with light cure/dual cure resin cements (Calibra)
- Self-etch adhesive luting cements (SmartCem)

Zirconia (Cercon, Lava)

- Total Etch with Light cure/dual cure resin cements (Calibra)
- Self-etch adhesives Prime & Bond elect with light cure/dual cure resin cements (Calibra resin cement)
- Self-etch adhesive luting cements (SmartCem)

Veneer Case Checklist

Pt. _____

- Impressions
- Photos
- Shape _____
- Shade _____
- Length _____
- Radiographs
- Note if decay is present _____
- Financial Arrangements _____
- Comfort Checklist
- Prep and Seat Appointments _____
- Send Case to Lab

Lab _____ Due Date _____

The Painless Injection

- Heated anesthetic is a must. It is less shock to the system
- First use 4% Citanest Plain (Astra) and start on the most distal tooth to be prepared. This anesthetic has a neutral ph of 7 so it will not burn
- Start slowly just under the tissue and balloon a little bubble size (about $\frac{1}{4}$ carpule).
- Push the anaesthetic “bubble” mesially to the next tooth and then place $\frac{1}{4}$ more of the Citanest into the moved bubble. The already existing anesthetic will then be used to inject the next site without the patient filling the needle.
- Continue around to the midline and then start on the other most distal tooth in the other quadrant and move toward the midline.
- After the entire area to be prepared has been infiltrated with Citanest repeat with a longer lasting anesthetic in the same method.

Preparation for Non/minimal Prep Veneers

- Never promise no prep until you have a consult
- Make sure your patient understands there will be a slight thickness
- Make sure the patient understands there will be a “speed bump” at the gingival
- If patient is making 3 shade or higher transition that you will have to minimally strip the contacts
- Send models to the laboratory to get there perspective
- Determine path of draw (facial or occusal)
- Some patients my have minimal prep instead of no prep
- Best candidates for minimal prep is post ortho and or slight spacing (tooth-space relationship)
- Visualize how the case will be finished.
- A partial wax-up may be needed so “mock-up” can be done
- If one of the teeth is a crown replacement you may have to prepare slightly on the adjacent teeth to match

Preparation Sequence For Veneers

- Determine the shape and shade that patient desires and have a laboratory wax-up, preparation matrix (AquaSil Putty), and template for temporary veneers.
- Round arch first. Take away anything facial or lingual to the ideal arch form
- Place depth cuts
- Prepare teeth, smooth margins and round line angles
- Verify occlusion, clearance and take impression
- Determine stump shade (Photo would be ideal)
- Clean teeth with chlorhexidine air dry then place Calm It and air dry, Do not rinse
- Load laboratory matrix (AquaSil Putty) made from the lab with desired Bis-Acrylic material like Integrity place in mouth appropriate time
- Carefully remove matrix while leaving the bis-acrylic in the mouth
- Trim margins with 7901 carbide bur, verify occlusion and polish with composite polishing points and burs
- Take impressions and photos of (Integrity) temporaries for the lab
- Call patient in 24-48 hours to confirm shape and phonetics

SATISFACTION AND COLOR APPROVAL

_____ I have inspected my veneers/cosmetic work with a preview gel in my mouth. I am satisfied with the appearance, including color, length, and shade of the teeth. Therefore, I have instructed Dr. Poss and staff to place the final restorations in my mouth.

CONSENT TO TAKE AND PUBLISH PHOTOGRAPHS AND INFORMATION

From time to time, Dr. Poss will use anonymous information and photographs from patient cases for the purpose of continued dental education and lecturing, promotional purposes and the like.

_____ I hereby authorize Dr. Stephen D. Poss and such assistants, photographers, and technicians as he may engage, to take such photographs of me as Dr. Poss may desire before, during, and after the cosmetic or other dental work which is to be performed upon me and I hereby consent to having such photographs published and republished in professional journals, websites and medical books or for any other purpose which Dr. Poss may deem fit. I further consent to permit the publication of information relating to my case, either separately or in connection with the publication of the photographs taken of me.

Signed: _____
Patient

Parent or legal guardian
(If Patient is under 18)

Date: _____

Sequence For Cementation For Veneers

- Clean teeth with chlorhexidine and rinse
- Etch 2-3 teeth at a time. Selective enamel etch is an optional or complete etch.
- Place a coat of universal adhesive like Prime& Bond Elect and evaporate solvent and cure
- Place light cure resin cement only and place luting cement Calibra in veneer in the two central incisors and firmly place on teeth
- Use tacting tip and cure at apical portion for 3-5 seconds
- Place veneers 7,6,5 then 10,11,12, and tact to place
- Carefully floss each veneer and light cure completely
- Using scalers clean off excess cement. Then clean cervical margins with Enhance cups. Use Shimmer Polishing Paste to smooth if needed.

Stephen D Poss D.D.S. Diplomat ACSDD

Poss Dental Designs www.drpossmiles.com

Practical Sleep Solutions www.practicalsleepsolutions.com

1646 Westgate Circle, Suite 100 Brentwood, TN 37027

phone: 615.373.1056 **fax:** 615.373.4864

Connect with us on Facebook - www.facebook.com/possdentaldesigns