

Let's be Direct:

Techniques for Perfecting Tooth Colored Restoration Placement



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Minimally Invasive Dentistry

- MID Diagnostics
 - Digital Radiography
 - CBCT
 - Diagnodent-audio & digital readout of laser fluorescent decay
 - Spectra-fluorescence computer screen caries detection
 - Sopro Life- blue light fluorescent live video camera
 - CariVu-video camera handpiece transilluminates Interproximal
- MID (Minimally Invasive Dentistry)
 - Lite Touch Erbium YAG laser
 - First restoration is important to remain conservative
 - Use 169L, 330, fissurotomy, 201.3VF or SE-3VF burs
 - Use slow speed round burs
 - High viscosity flowables
 - G-aenial Universal Injectable-spherical filler particles
 - BeautiFil Flo Plus X 00-PRG set glass ionomer fillers release fluoride
 - Calset composite warmer
- Anterior Composite Layering Techniques
 - Build inside out
 - Build opaque to translucent (high to low chroma)
 - Build dark to light (high to low value)
 - Build larger to smaller filler particle size
 - Start with dark opaque dentin shade to block shine through
 - Miris or Aura-Shades 1-7 (primarily 4-7 unless trying to lighten tooth)
 - Next add all-purpose type composite (Spectra TPH, Venus Pearl, Aura MC 2-5, Harmonize Dentin)
 - Make sure junction between restoration is invisible
 - Add characterization (SDI Shade Modification, Kulzer Effect Color, Kerr, Cosmedent and others)
 - Outer layer spherical, nano-hybrid or microfill (Esthelite Sigma Quick, Beautifil II, G-aenial Sculpt, Harmonize Enamel)
 - Proper thickness important for color-build to contour (too thick is gray)
- Anterior Composite Finishing & Polishing Techniques
 - Sandpaper disks for incisal edge-Super-Snap
 - Fine diamonds for bulk removal (stay off actual tooth surface)
 - Finishing carbides for shaping
 - Look at incisal edge with a mirror
 - Enhance wheels to blend restoration and tooth
 - DiaComp Feather Light

Anterior Composite Matrices

- Contour Strip (unavailable)-Now Margin Perfect Matrix
- Pre-bend in fingers
- Slide the curved neck around the gingival
- Pull 2 lends through the contact -apical pressure on gingival margin

- Seat below the free gingival margin
- Use instrument to shape form of mylar
- Trim with scissors the excess matrix
- Dry gingival and apply Heliobond and cure
- Apply composite at cervical and work apically
- Add more composite until shaped

Composite Placement Instruments

- P-1 posterior placement instrument (Ivoclar)
- Optrasculpt (Ivoclar)
- Compo-roller (Kerr)

Improved Dentin Bonding

- Total etch technique
 - Often under-etched enamel, over-etched dentin
 - Proper moisture
 - Technique sensitive
 - Solvents
 - Acetone
 - Alcohol
 - Water
 - Post-operative sensitivity reduced by desensitizers
 - GLUMA-gluteraldehyde & HEMA-avoid tissue
 - Hemaseal & Cide-chlorhexidine & HEMA
- Self etch technique
 - Decreased bond strength to un-etched enamel
 - Selective etching of enamel only but not on dentin
 - Bond incompatibility to self cure & dual cure resins
 - Use a dual cured activator
 - Hydrolytic degradation
 - Use MDP containing bonding agents
 - Use hydrophilic and then hydrophobic primers
 - Enzymatic collagen attack-MMP's (Matrix Metalloid-Proteases)
 - Chlorhexidine
 - Total etch-apply after etching for 30 sec-do not wash off
 - Self etch- apply 2 coats before applying primers
 - Benzalkonium Chloride
 - MDPB
 - GLUMA
 - Hemaseal & Cide
- Selective etch technique-use Universal bonding agents
 - Can be used for total or self etch *but* recommended with selective etch
 - Can be used for direct or indirect restorations *but* recommended with direct only (use self cure for indirect)
 - Can be used for all indirect restorations *but* recommend using separate porcelain zirconia or metal primer

Aging Population

- Challenges
 - Xerostomia
 - Root exposures
 - Difficulty maintaining oral hygiene
 - Unable to tolerate long appointments
 - Difficulty coming to office
 - Limited finances
- Alternatives
 - Fiber reinforced natural tooth pontics
 - Bond bis-acryl chairside fabricated crowns
 - Bioactive restorations
 - Age appropriate restorations

Bioactive Restorations

- Oral Environment Challenges
 - Xerostomia-patient taking 4 or more medications has 50% chance
 - Carbohydrates
 - Antacids
 - Bottled water
 - Illegal drugs
- Glass Ionomer Materials
 - Self-curing: acid/base setting reaction
 - Ionic bond to calcium of tooth structure
 - Elimination of polymerization shrinkage stress
 - More highly filled-reduced wear compared to RMGI
 - Expansion/contraction similar to tooth
 - Highest fluoride release/re-uptake
 - Slight moisture is advantageous
 - Bulk placement
 - Anti-bacterial properties
 - Reduced post-operative sensitivity
- Glass Ionomer Uses
 - Cervical xerostomia induced lesions
 - Meth mouth
 - Class V restorations on dentin
 - Visible exposed repair around crown margins
 - Pediatric patients
 - Sealants
 - Crown buildups
 - Sandwich technique (open & closed)
 - Long term interim restorations

- Posterior Glass Ionomers
 - 5-10% of teeth restored
 - High-caries risk patients
 - Thin buccal or lingual walls
 - Deep internal cracks
 - Deep sub-gingival molar interproximal restorations
 - Decalcified chalky margins
 - Long term interim restorations
 - Invaluable adjunctive material

- Resin-modified Glass Ionomer Materials
 - Dual-curing: acid/base setting polymerization reactions
 - Ionic & micromechanical bonding
 - Shrinkage stress if cured prior to set
 - Higher tensile, bond strength and wear compared to GI
 - More translucent than GI
 - Fluoride release/re-uptake

- Resin-modified Glass Ionomer Uses
 - Liner or base
 - Class V restorations
 - Crown buildups
 - Sandwich technique
 - “Dental duct tape”

- Enhanced Resin-modified Glass Ionomers-Activa
 - Releases & recharges calcium, phosphates, & fluoride
 - Dual cure, self cure, light cure
 - Liner or base
 - Class V restorations
 - Class I, II, & III restorations
 - Pediatric patients
 - Geriatric patients
 - Crown buildups
 - Crown cementation

- Hybrid glass ionomer & calcium aluminate cement-Ceramir
 - Forms apatite crystals
 - Extremely low sensitivity-due to high pH
 - Low film thickness
 - Fills in small marginal gaps
 - Easy cleanup
 - Works well with implants

- Self-adhesive resin cement & calcium aluminate cement-Theracem
 - Dual cured-68% conversion w/o light
 - Calcium & fluoride releasing & recharging
 - Bonds well to zirconia (contains MDP)
 - Sets in <5 minutes-easy cleanup

- Radiopaque
- Becomes alkaline
- Promotes apatite formation
- Resin-modified calcium silicate-Theracal
 - Light cured apatite forming MTA in a hydrophilic resin that releases calcium
 - Nearly as effective as self-setting MTA
 - Easy to use and cost effective
 - Direct and indirect pulp caps
 - Pulp exposure-criteria for successful treatment
 - Asymptomatic
 - 1 small exposure
 - Able to control bleeding
 - Pulp capping procedure
 - Control bleeding w chlorhexidine, visine, sodium hypochlorite
 - Disinfect w chlorhexidine
 - Place Theracal
 - Cover with RMGI to act as a band-aid

New Composite Technology

- Filler particle technology
 - Giomers- with S-PRG filler particles made of glass ionomer
 - Nano-fills
 - Nano-hybrids
 - Spherical particles
- Universal composites
 - Used in most situations
 - Choice often based on translucency/opacity
- Resin technology
 - Bis-GMA-estrogenicity
 - UDMA and other resins (European, Kerr)
 - High molecular weight monomers (GC, Kulzer)
 - Non Bis-GMA Kerr, Pulpdent, GC, some Kulzer,
- Polymerization Shrinkage *Stress*
 - Bulk fill composites
 - Initiators more sensitive to light
 - Delayed gel state
 - Flexible filler particles
 - Greater depth of cure
- Class II Composites
 - Triodent V-3/Palodent Plus
 - Garrison Composi-Tight 3D Fusion