Posterior Composites:

A Practical, Efficient Technique

Presented by


The Maimonides Dental Society

Sponsorship

Kerr™

Chevy Chase, Maryland
March 26, 2013
# MATERIALS LIST

## CLASS II POSTERIOR Direct Resin Restorations

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
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<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td><strong>Rubber Dam Placement Technique Video:</strong></td>
<td>Coltene/Whaledent</td>
</tr>
<tr>
<td>2</td>
<td><strong>Medium Rubber Dam:</strong></td>
<td>Coltene/Whaledent</td>
</tr>
<tr>
<td>3</td>
<td><strong>Rubber Dam Clamps:</strong></td>
<td>BW (#A778703), DW (#A778705), NW (#A77388) and PW (#A77389) by Dentsply Professional</td>
</tr>
<tr>
<td>4</td>
<td><strong>Matrices:</strong></td>
<td>Omnidx Matrix by Ultradent (<a href="http://www.ultradent.com">www.ultradent.com</a>), Pinch matrix by Garrison Dental Solutions (<a href="http://www.garrisondental.com">www.garrisondental.com</a>) or ConvexiT by Clinician’s Choice (<a href="http://www.clinicianschoice.com">www.clinicianschoice.com</a>)</td>
</tr>
<tr>
<td>5</td>
<td><strong>Sectional Matrices:</strong></td>
<td>V3-Ring by Triodent (<a href="http://www.ultradent.com">www.ultradent.com</a>), Composi-tight by Garrison Dental Solutions</td>
</tr>
<tr>
<td>6</td>
<td><strong>Wedge Guards:</strong></td>
<td>Wedge Guard by Triodent (<a href="http://www.ultradent.com">www.ultradent.com</a>) or Fender Wedge by Garrison Dental Solutions</td>
</tr>
<tr>
<td>7</td>
<td><strong>Placement Instruments:</strong></td>
<td>Posterior Composite Placement Set according to Dr. Ron Jackson (#AERJK) by American Eagle, Inc. <a href="http://www.am-eagle.com">www.am-eagle.com</a></td>
</tr>
<tr>
<td>8</td>
<td><strong>Contact Instruments:</strong></td>
<td>Contact Pro by C.E.J. (<a href="http://www.cejdental.com">www.cejdental.com</a>), Proform by Garrison Dental Solutions or TriMax by AdDent (<a href="http://www.addent.com">www.addent.com</a>)</td>
</tr>
<tr>
<td>9</td>
<td><strong>Gel etchants:</strong></td>
<td>Select HV by Bisco (<a href="http://www.bisco.com">www.bisco.com</a>) or Ultreacht by Ultradent</td>
</tr>
<tr>
<td>10</td>
<td><strong>Desensitizers:</strong></td>
<td>Gluma Densensitizer by Hereaus Kulzer, MicroPrime G by Danville Materials (800-827-7940), G5 by Clinician’s Choice</td>
</tr>
<tr>
<td>11</td>
<td><strong>Chlorhexidine:</strong></td>
<td>Conspepsis with Blu-max Infusor tip by Ultradent or Cavity Cleanser by Bisco</td>
</tr>
<tr>
<td>12</td>
<td><strong>3 Step Total-etch:</strong></td>
<td>Optibond FL by Kerr, Scotchbond MP (directs only) or Scotchbond MP Plus (universal) by 3M/Espe, etc., etc.</td>
</tr>
<tr>
<td>13</td>
<td><strong>2 Step Total-etch:</strong></td>
<td>Optibond Solo Plus (universal) by Kerr, All Bond TE(universal) by Bisco, ExciteF (universal) by Ivoclar, XP Bond (Universal) by Dentsply, Single Bond Plus (universal) by 3M/Espe, PQ1 (direct only) by Ultradent, Gluma Comfort Bond (universal) by Kulzer, etc., etc., etc.</td>
</tr>
<tr>
<td>14</td>
<td><strong>2 Step Self-Etch:</strong></td>
<td>Optibond XTR by Kerr, All Bond SE by Bisco, AdheSE by Ivoclar, Clearfill SE Protect by Kuraray, etc.</td>
</tr>
<tr>
<td>15</td>
<td><strong>New Universals:</strong></td>
<td>Optibond XTR by Kerr, All Bond Universal by Bisco, Scotchbond Universal by 3M/Espe, Peak Universal by Ultradent, Prime &amp; Bond Elect by Dentsply</td>
</tr>
<tr>
<td>16</td>
<td><strong>Medium Body Resins:</strong></td>
<td>Premise or Herculite Ultra by Kerr, Empress Direct (nano-microhybrid) by Ivoclar, Esthet-X HD by Dentsply, Filtek Supreme Ultra by 3M/Espe, Vit-l-escence by Ultradent, etc.</td>
</tr>
<tr>
<td>17</td>
<td><strong>Customized Posterior Composite System:</strong></td>
<td>Sonicfill by Kerr</td>
</tr>
<tr>
<td>18</td>
<td><strong>Finishing burs:</strong></td>
<td>7404, 7406, 274-16</td>
</tr>
<tr>
<td>19</td>
<td><strong>Finishing discs &amp; strips:</strong></td>
<td>Optidisc by Kerr</td>
</tr>
<tr>
<td>20</td>
<td><strong>Finishing points &amp; cups:</strong></td>
<td>ProGloss by Axis, Astropol by Ivoclar, Jiffy System by Ultradent, Flexi Cups and Points by Cosmedent, D Fine resin polishers by Clinician’s Choice, Enhance by Dentsply, etc.</td>
</tr>
<tr>
<td>21</td>
<td><strong>Magnification Loupes:</strong></td>
<td>Orascoptic Research/Kerr (<a href="http://www.orascoptic.com">www.orascoptic.com</a>)</td>
</tr>
<tr>
<td>22</td>
<td><strong>Fiberoptic Illumination:</strong></td>
<td>Discovery by Orascoptic</td>
</tr>
</tbody>
</table>
**INDICATIONS:**
1. Patient desires aesthetics or no metal.
2. Smaller cavity – width less than 1/3 buccal-lingual width of the tooth.

**CONTRAINDICATIONS:**
1. Isolation questionable or not possible for the adhesive process. RUBBER DAM!
2. Cavity is large - replaces several walls / cusps

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**Composite Resins for Posterior Direct Restorations**

**Flowables - Wet cavity floor**

- Hellimolar Flow (Henry)
- Tetric Evo Flow (Ivoclar)
- Dyract Flow (Dentsply)
- Revolution 2 (3M)
- AeliteFlo LV (3M)
- Gradia Direct Flow (GC)

**Other options:** Vitrebond (3M), Lining Cement (GC)

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**Composite Resins for Posterior Restorations**

<table>
<thead>
<tr>
<th>Universal (3.5 - 4.5%)</th>
<th>Low Shrink (&lt;2%)</th>
<th>Packable (&lt;1.8%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>TPB (Dentsply)</td>
<td>Tetric Evo (Ivoclar)</td>
<td></td>
</tr>
<tr>
<td>HelioCem (Ivoclar)</td>
<td>Tetralume (Ivoclar)</td>
<td></td>
</tr>
<tr>
<td>Revolution 2 (3M)</td>
<td>Ekabond (3M)</td>
<td></td>
</tr>
<tr>
<td>Aelite Flo LV (3M)</td>
<td>Gradia (GC)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Good Adhesion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Erinite (Ivoclar)</td>
</tr>
<tr>
<td>Profilin (3M)</td>
</tr>
<tr>
<td>Sparkle Direct (3M)</td>
</tr>
<tr>
<td>Vitrebond Ultra (3M)</td>
</tr>
<tr>
<td>Vetric (3M)</td>
</tr>
<tr>
<td>Vetric Plus (3M)</td>
</tr>
</tbody>
</table>

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**Clinician’s Choice**

- .001 inch V3 system
- .001 inch Wave Wedge
- .001 inch XR Wedge
- .001 inch Pinch Wedge

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ADHESIVE Classification

<table>
<thead>
<tr>
<th>Direct / Indirect</th>
<th>Direct Only</th>
<th>Indirect Only</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 Step</td>
<td>2 Step</td>
<td>2 Step</td>
</tr>
<tr>
<td>Scotchbond MP (2x)</td>
<td>P6 (2x)</td>
<td>P6 (2x)</td>
</tr>
<tr>
<td>Optional (Fluor)</td>
<td>MP (2x)</td>
<td>Exetel &amp; OptiBond (2x)</td>
</tr>
<tr>
<td>PrimeQuick (Fluor)</td>
<td>MV Direct (Demineral)</td>
<td>Prim &amp; Bond (Fluor)</td>
</tr>
<tr>
<td>Self</td>
<td>Etch (2 Step)</td>
<td>Etch (1 Step)</td>
</tr>
<tr>
<td>CSE &amp; CSE Protect (2x)</td>
<td>ScotchBond SE (2x)</td>
<td>Optibond XTR (Kerr)</td>
</tr>
<tr>
<td>Adhesive (2x)</td>
<td>ScotchBond SE (2x)</td>
<td>Optibond XTR (Kerr)</td>
</tr>
<tr>
<td>Xeno V (2x)</td>
<td>Xeno V (2x)</td>
<td>Optibond XTR (Kerr)</td>
</tr>
<tr>
<td>Bond (Fluor)</td>
<td>Bond (Fluor)</td>
<td>Bond (Fluor)</td>
</tr>
<tr>
<td>Bond (2x)</td>
<td>Bond (2x)</td>
<td>Bond (2x)</td>
</tr>
<tr>
<td>2-Step</td>
<td>1-Step</td>
<td>1-Step</td>
</tr>
<tr>
<td>2-Step E&amp;R (3x)</td>
<td>2-Step E&amp;R</td>
<td>2-Step E&amp;R</td>
</tr>
<tr>
<td>2-Step SE (3x)</td>
<td>1-Step SE</td>
<td>1-Step SE</td>
</tr>
<tr>
<td>1-Step SE</td>
<td>Universal</td>
<td>Universal</td>
</tr>
<tr>
<td>Prime</td>
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<td>Bond</td>
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<tr>
<td>mix</td>
<td>mix</td>
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</tr>
<tr>
<td>no-mix</td>
<td>no-mix</td>
<td>no-mix</td>
</tr>
</tbody>
</table>

New UNIVERSAL Adhesives

- Scotchbond Universal (3M)
- Peak Universal (Ultradent)
- All Bond Universal (Bisco)
- Prime & Bond Elect (Dentsply)
- Optibond XTR (Kerr)

Etch & Rinses

- Self-Etch (ER)
- Self-Etch (SE) (Selective Etch)

Direct / Indirects

Compatible with all composites: Light, Self & Dual
Bond to restorative Materials

Post-Operative Sensitivity:
MAJOR CAUSES E&R

1. Over-etching Dentin
2. Under-priming
3. Inadequate Drying
4. Under Curing

Dentin Bonds Degrade:
1. Enzymatic activity (MMP)
2. Hydrolysis

Apply 30 seconds,
Suction
Blot Excess

Deactivates MMP Enzymes
Bisco

If use this etchant don’t need Consepis

“The anti-MMP activity of Kanazawellium chusenko”

“State of the art etch-and-rinse adhesives”

Dentin Bonds Degrade:
1) Enzymatic activity (MMP)
2) Hydrolysis

Apply 30 seconds, Suction
Blot Excess

↓ Hydrolysis
↑ Dentin Bond Durability

Intensity of quartz-tungsten-halogen light curing units used in private practice in Toronto

“33% to 48% of the lights in dental offices had intensities of less than 300 mW/cm^2”

High intensity Lights > 1000mW/cm^2
- Demi Plus (Kerr)
- Bluephase G2, 20i, Style (Vivacor)
- Elipar S10 (3M Espe)
- Smartlite Max (Dentsply)
- Valo (Ultradent)

3-Step E&R 2-Step E&R 2-Step SE (Selective Etch) 1-Step SE (Selective Etch) Universials (Selective Etch)

Post-Operative Sensitivity:
MAJOR CAUSES SE
1. Over-etching Dentin
2. Under-priming
3. Inadequate Drying
4. Under Curing

POSTOPERATIVE SENSITIVITY Still a Problem?

OR

Kerr

Enamel


Dentin

“Dentin Bond Strengths of Four Adhesion Strategies after Thermal Fatigue and 6-month Water Storage”

Enamel

(Selective Etch)

Dentin

↓ Hydrophillic
↓ Hydrophobic
↓ Permeability
↓ Crosslinking

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E & R ADHESIVE Summary:
Direct Composite

- 3-step
- 2-step
- 2 Layer
- 1 Layer
- OR
- not needed if using SonicFill

SE ADHESIVE Summary:
Direct Composite

- Chlorhexidine
- Primer & Bond
- not needed if using SonicFill
- (Selective Etch)
- Chlorhexidine
- not needed if using SonicFill

WHAT DENTISTS WANT:
Rapid, Single Increment, Bulk Fill Placement

Requirements:
1. High Depth of Cure
2. Shrinkage Stress
3. Mechanical Properties
4. Adaptation
5. Esthetics

Customized Composite + Sonic Energy

SonicFill allows dentists to rapidly adapt and place an Esthetic Composite in 1 free “bulk fill” increment (no liner needed or capping layer needed)

Efficient Liquefaction, Good Flowability...

- Highly responsive to shear stress (special modifiers)
- Upon activation viscosity drops by 87%
- Upon de-activation viscosity increases for sculpting
- Other composites will not respond this way

“Correlation of bottom-to-top surface microhardness and conversion rates for a variety of resin composite compositions”

- Measure Hardness at Bottom
- Measure Hardness at Top
- = 80% or more (fully cured)

Dental Advisor
(Research Report #3, 2/2011)
NOVA Southeastern University
(Dr. Jeff Thompson)

SonicFill @ 5 mm
97%

Demi Plus LED

Shrinkage Stress

Contributing Factors:
1. C-Factor (Configuration Factor)
2. Modulus of Elasticity
3. Volumetric Shrinkage
4. Polymerization Kinetics (post-gel shrinkage)

Measurable Effects:
1. Marginal Gaps
2. Cuspal Bending
Live Patient Hands-On Course:
Mastering Dynamic Adhesion: Practical Science, Predictable Techniques (4 days) at
The Las Vegas Institute for Advanced Dental Studies 888-584-3237 or www.lviglobal.com

Live Patient Videos by Dr. Jackson:
• Esthetic Restorative Excellence with Inlays/Onlays available through
  Geraldine at 540-687-8075 or geraldine@ronjacksondds.com

SELECTED BIBLIOGRAPHY

A. TOOTH REINFORCEMENT OF BONDED RESTORATIONS

7. "Resistance to maxillary premolar fractures after restoration of Class II preparations with resin composite or ceromer;" Claudia Regina Freitas, Maria Miranda, Marcelo Ferrarezi de Andrade, et.al., Quint Int’l. Vol. 33 No. 8 2002, pp.584-594

B. ADHESION

8. **Currently bonding to enamel is still best accomplished through the use of an etch-and-rinse approach**, Van Meerbeek B, Func. Esthetics & Restor Dent, 2008 Series 2 #1 pp. 18 - 25

a. **CHLORHEXIDINE**


b. **Glutaraldehyde**


C. **TECHNIQUE**

2. **Smile Analysis and Esthetic Design: “In the Zone”**, McLaren EA, Cao PT, Inside Dentistry; July/August 2009 pp.44-48
6. 12 Steps to Smile Design 1: Macraesthetic Elements; Orr C, Aesthetic & Implant Dentistry; Vol. 7 Number 1 2005, pp. 16-22

D. LONGEVITY


E. MISCELLANEOUS