

Porcelain Veneers Success Using  
Supra-gingival Dentistry



Jose Luis Ruiz DDS, FAGD  
Director of:



LOS ANGELES INSTITUTE  
of Esthetic Dentistry  
&  
RUIZ DENTAL SEMINARS

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THE SMILE



A Smile has social, physiological and psychological aspects.  
Dumas G. *Pratiques Universitaires De France* 1949-03617-000

Ruiz JL The Psychology of the Smile Journal of Cosmetic Dentistry December 2003

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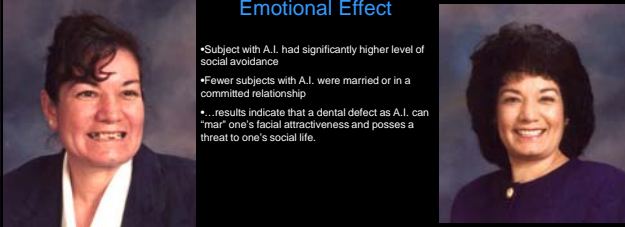
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Emotional Effect



- \*Subject with A.I. had significantly higher level of social avoidance
- \*Fewer subjects with A.I. were married or in a committed relationship
- \*...results indicate that a dental defect as A.I. can "mar" one's facial attractiveness and poses a threat to one's social life.

Coffield KD, Phillips C, Brady M et al. The psychosocial impact of amelogenesis imperfecta JADA Vol. 136 PP 620-30 May 2005

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Traditional Sub-gingival Crowns Are Destructive & Difficult & Short Lasting



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Results Are Unpredictable; With Sub-gingival Crowns



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Single Tooth Fracture



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But Only If We Use Supra-gingival,  
Minimally-invasive Techniques



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What is Success with Porcelain  
Veneers?

- 1. Patient Satisfaction
- 2. Excellent Esthetic/Restorative Results
- 3. Longevity



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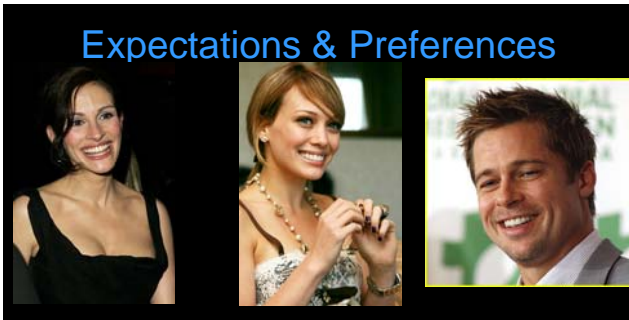
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### What Failed?



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### What's More Important Materials or Diagnosis?

#### Diagnosis | Key to Success with...

- Treatment acceptance
- Treatment planning sequence
- Treatment results
- Longevity...



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### Objectives...

- Understand how to Perform Proper Diagnosis, Design & Communication with Patient.
- Understand of specific requirements of restorative materials, bonding systems & proper techniques.
- How to Manage Occlusion for Longevity.



Ruiz JL. Achieving Longevity in Esthetics by Proper Diagnosis and Management of "Occlusal Disease". 2007 Contemporary Esthetics Vol 11 (6), 24-30

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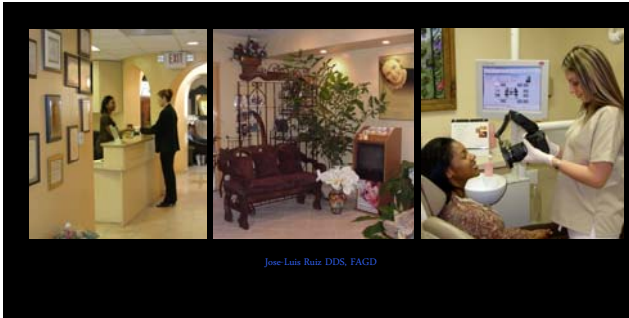
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**Disclosure**

**Jose-Luis Ruiz DDS**  
 Full Time Private Practice, Los Angeles CA  
 Director, of the Los Angeles Institute of Esthetic Dentistry  
 CE Course Director, USC School of Dentistry  
 Instructor , Gordon Christensen's PCC in Utah  
 Honorary Professor , Warwick University , UK  
 Associate Editor , Dentistry Today

- Unpaid clinical evaluator CR(A)
- Do Not receive honorarium from any company!
- Past and Present Unpaid Clinical Consultant:  
 3M ESPE; Heraeus Kulzer; Stron; VOCO;  
 Kuraray; Den-Mat; Sybron Kerr; Dentply, and many others.

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**Los Angeles Institute Of Clinical Dentistry**

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## 2 Diagnosis

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**Dentists Exam**

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Complete Examination Includes...

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**When is Occlusion Important?**

- When signs or symptoms of OD are evident
- When extensive restorative Dentistry is being planned!!!

Ruiz, J.L. Achieving Longevity in Esthetics by Proper Diagnosis and Management of "Occlusal Disease". 2007 Contemporary Esthetics Vol 11 (6), 24-30

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Is Occlusion a Problem In Restorative Dentistry?



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Is Occlusion a Problem In Restorative Dentistry?



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OD How Serious?  
Patients on Their Early 30's



Healthy



Occlusal Disease

Why?

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### Why is OD So Ignored?

- "Few Available Practical Occlusal Education"
- "JD" & occlusion mixed together.
- It is made to be too complicated.
- Population not educated about OD




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### Occlusal Treatment for All?

- What Percentage of clinicians perform an occlusal examination routinely as part of comprehensive exam?

"Unnecessary data gathering cannot be regarded as measurement of thoroughness."  
McNeill C. Science and Practice of Occlusion  
 Quintessence Books

"L.D. Pankey wrote that only 2% of dentist...can diagnose, plan treatment and motivate patients to provide a comprehensive treatment plan."  
PE Dawson

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### Occlusal Disease Management System

- Stage 1 Initial Occlusal Evaluation (all patients)
- Stage 2 Occlusal and TMJ Examination (as needed and accepted by patients)
- Stage 3 TMJ Examination or Referral to local expert



Ruiz JL. Occlusal Disease: Restorative consequences and Patient Education. *Dentistry Today* 2007 Sep 26(9):90-95  
 Ruiz JL. Achieving Longevity in Esthetics by Proper Diagnosis and Management of "Occlusal Disease". 2007 *Contemporary Esthetics* Vol 11 (6): 24-30  
 Ruiz JL. Coleman TA. Occlusal Disease Management System: The Diagnosis Process. *Compendium* 2008 Vol. 29 No. 3

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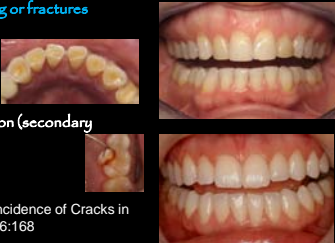
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### 7 Signs and Symptoms of Occlusal Disease

- Pathological tooth wear, chipping or fractures
- Tooth hypersensitivity
- Tooth hypermobility
- Fremitus
- Abfractions
- Severe localized bone destruction (secondary to periodontal disease)
- Muscle pain and TMJ pain.



Ratcliff S, Becker IM, et al. Type and Incidence of Cracks in Posterior Teeth, J Prosth Dent: 2001;86:168

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Coleman TA, Grippo JO, et al Cervical dentin hypersensitivity. Part III: Resolution following occlusal equilibration. Quintessence Int 2003;34:427-434

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### Extreme Hypersensitivity



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### 7 Signs and Symptoms of Occlusal Disease

Jackie 21

- Pathological tooth wear, chipping or fractures
- Tooth hypersensitivity
- Tooth hypermobility
- Fremitus
- Abfractions
- Severe localized bone destruction (secondary to periodontal disease)
- Muscle pain and TMJ pain.



Gremillion HA. The relationship between occlusion and TMD: An evident-based discussion. J Evid Dent Pract 2006;6:43-47

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### Stage 1 = Discovery & Education

- Stage 1 Initial Occlusal Evaluation (all patients)
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 Ruiz JL, Coleman TA. Occlusal Disease Management System: The Diagnosis Process. Compendium 2008 Vol. 29 No. 3

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### VALUABLE PATIENT EDUCATION

**Do You Have Occlusal Disease?**





**Occlusal Disease Self Evaluation**

1. Are your teeth sensitive to heat or cold?  
 Very much  Somewhat  No
2. Do you grind or clench your teeth?  
 Frequently  Sometimes  Never
3. Do you have notches on your teeth, especially near the gums?  
 Yes  No
4. Do you ever wake up with tired facial muscles?  
 Frequently  Sometimes  Never
5. Do your front teeth look thin, worn-out, or chipped?  
 Yes  No

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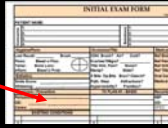
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### "Occlusal Disease Diagnosis System"

- Stage 1 Initial Occlusal Evaluation (all patients)
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 Ruiz JL. Coleman TA. Occlusal Disease Management System: The Diagnosis Process. *Compendium* 2008 Vol. 29 No. 3

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### The Record Taking Visit...



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### The Purpose of The Record Taking Visit is...

- ◊ To gather necessary information for final diagnosis.
- ◊ Permits an opportunity for communication of goals and limitations.
- ◊ Has 2 components...the occlusal portion (function), esthetic portion.



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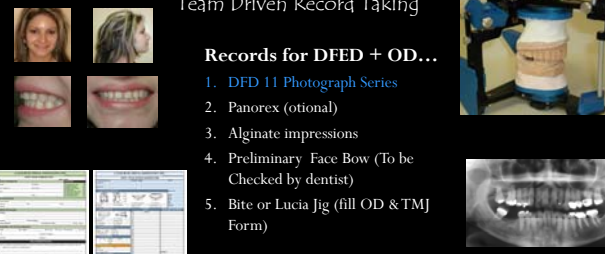
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Team Driven Record Taking

**Records for DFED + OD...**

1. DFD 11 Photograph Series
2. Panorex (optional)
3. Alginate impressions
4. Preliminary Face Bow (To be Checked by dentist)
5. Bite or Lucia Jig (fill OD & TMJ Form)



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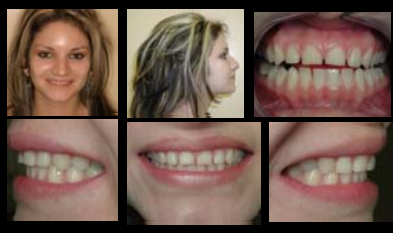
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**DFD Esthetic Photographic Series**

- ◊ 11 Photos
- ◊ 2 Face
- ◊ 4 Non-retracted Close ups
- ◊ 3 Retracted Close ups
- ◊ 2 Occlusal



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**Study Cast**

CRA (800) 223-6569  
High Quality Alginate Impressions by auxiliaries.



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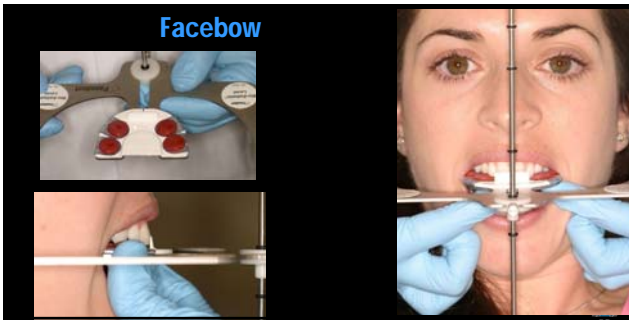
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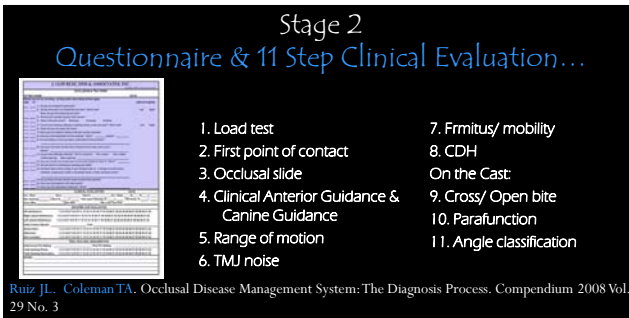
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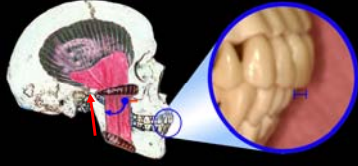
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### 1<sup>st</sup> Golden Rule: Even Contacts

Class III Lever. Ideally... when the muscles contract, the teeth would hit evenly and the condyle would be seated in its ideal place!



Sheikholeslam A, Riise C. Influence of experimental interfering occlusal contacts on the activity of the anterior temporal and masseter muscles ... J Oral Rehab 1983; Vol. 10:207-14  
Gibb C, Mahan PE, et al. Limits of Human Bite Strength. J Prosth Dent 1986 Aug;56(2):226

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### Consequence of a Premature Contact...



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### Occlusal Avoidance Pattern



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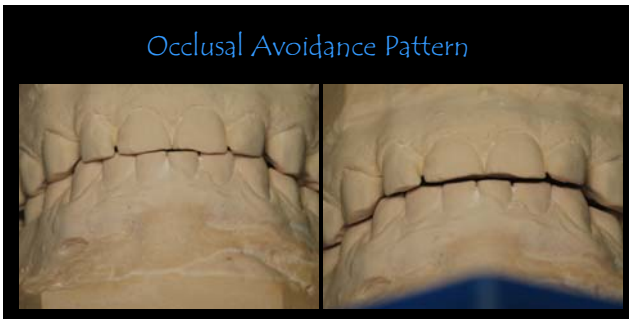
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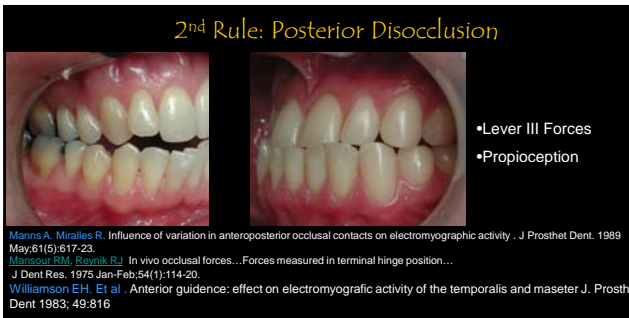
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### Why Canine Guidance?



Marin A. Chan et al. Influence of group function and canine guidance on electromyographic activity of elevator muscles. J Prosthet Dent. 1987 Apr;57(4):494-501

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### Porcelain Veneers...The Best Way to Correct Lack of Anterior Guidance



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### CR Slide



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Parafuctions



Regardless of cause, the most effective treatment for the effects of bruxism is perfection of the occlusion. PE Dawson

Ekfeldt A, Karlsson S. Changes of masticatory movement characteristics after prosthodontic rehabilitation of individuals with extensive tooth wear. *Int J Prosthodont.* 1996 Nov-Dec;9(6):539.

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Parafunction...Anterior & Canine Guidance



Ekfeldt A, Karlsson S. Changes of masticatory movement characteristics after prosthodontic rehabilitation of individuals with extensive tooth wear. *Int J Prosthodont.* 1996 Nov-Dec;9(6):539-46.

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Palatal Ridge & Guidance



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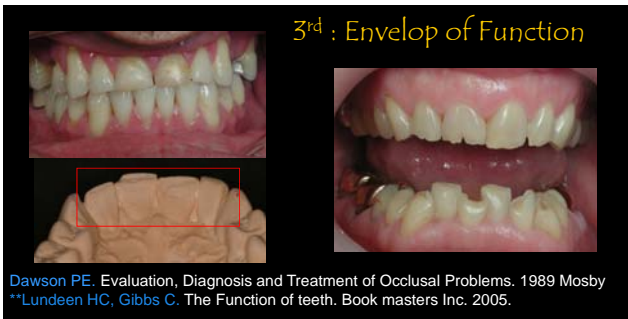
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Envelop of Function Correction



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Envelop of Function



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Natalia



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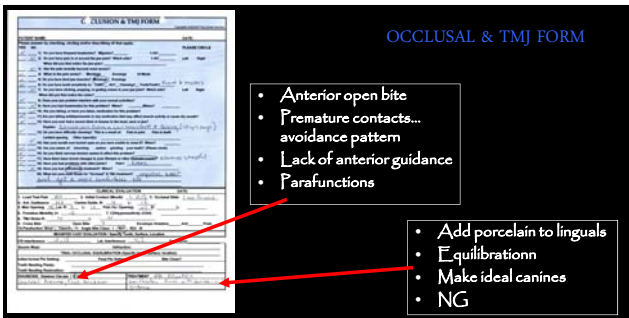
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Always Occlusal Guard...



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Group Function



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Occlusal Disease Management System  
3 Day Workshop

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**3 Smile Design**

Dr. Jose-Luis Ruiz [www.DrRuizOnLine.com](http://www.DrRuizOnLine.com)

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**"The Dento-Facial Esthetic Diagnosis System"...**  
How to Achieve Consistently Beautiful Smiles, not just Beautiful Teeth!

Ruiz JL. Achieving Optimal Esthetics on a Patient with Severe Trauma...JERD 2005 Vol 17 N 5:287-291

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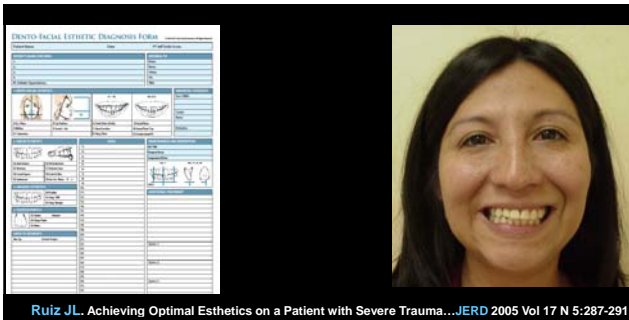
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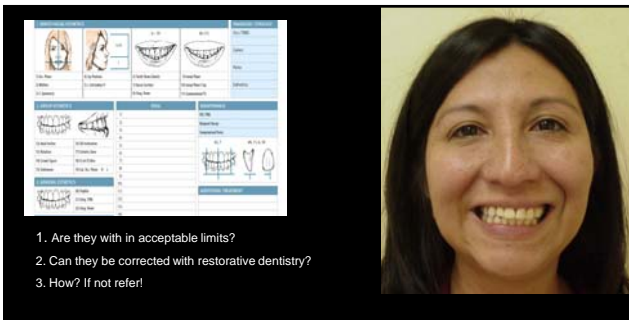
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1. Occlusal Plane  
2. Midline  
3. Facial Symmetry

1. Dento-Facial Esthetics  
2. Group Esthetics  
3. Gingival Esthetics  
4. Tooth Esthetics



1) Oc. Plane:  
2) Midline:  
3) F. Symmetry:

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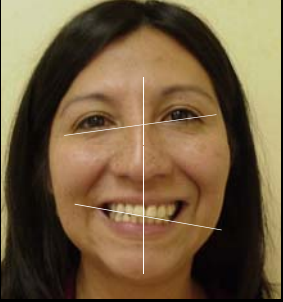

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*Facial Esthetic Dentistry*



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*6) Tooth Show (Smile)*



- Varies with age & gender
- Young females shows tooth up to gingival line
- A sign of youth!
- Notice if asymmetrical

6) Tooth Show (Smile);  
7) Bucal Corridor;  
8) Ging. Show:



Rivera-Morales WC, Goldman BM. Are speech based techniques for determining OVD reliable? Compendium December  
Rivera-Morales WC, Perez-Luna LR. Effects of increased VDO...closes speaking space. J. Dent Res 75:59 1996 Abstract  
Vig RG, Brundo GC. "Kinetics of Anterior" Tooth Display". J. Prosthet Dent. May 1978

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*7) Bucal Corridor*



- A full (wide smile) is more attractive, think Julia Roberts.
- A lot of negative space is a sign of a narrow upper arch.

6) Tooth Show (Smile);  
7) Bucal Corridor;  
8) Ging. Show:



McLaren EA, Rifkin R. Macroesthetics: Facial and Dentofacial Analysis. CDA Journal 2002 Vol. 30 No. 11  
Morley J, Eubanks J. Macroesthetic elements of smile design. JADA 2001 Vol 132 pp 39

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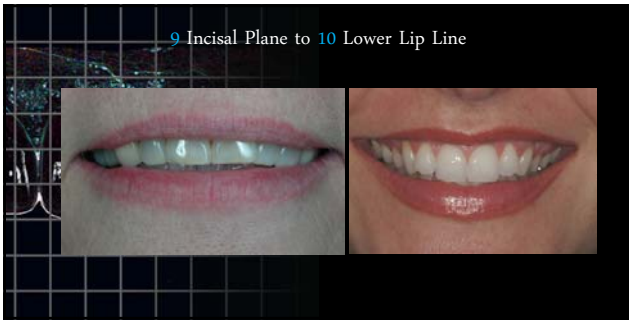
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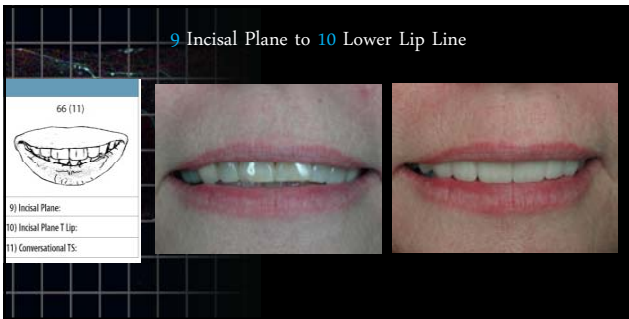
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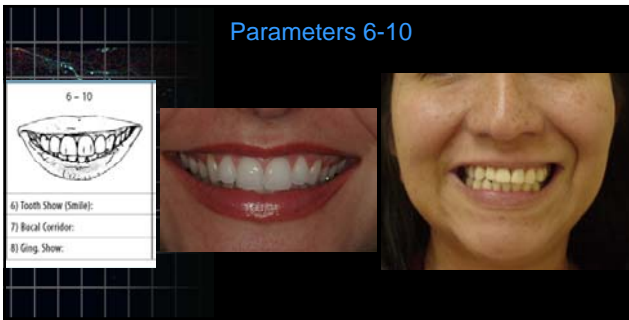
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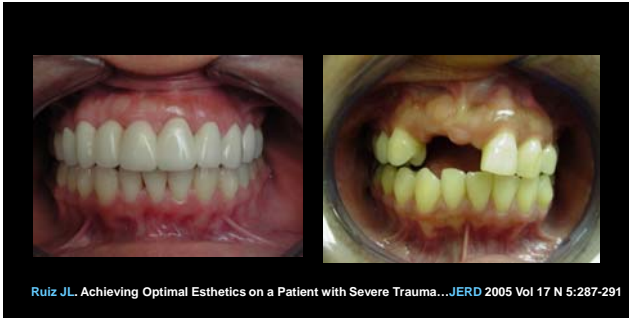
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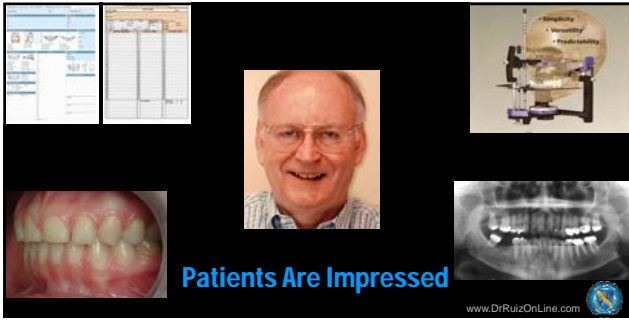
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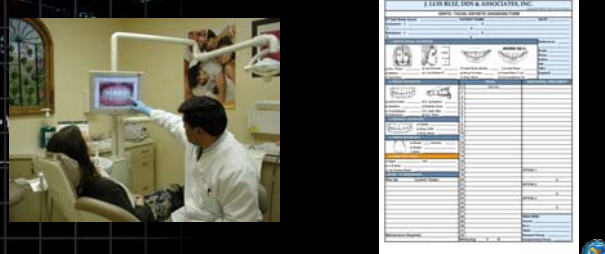
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**Asses the Patient Expectations, Before Committing!**



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Dr. Jose-Luis Ruiz [www.DrRuizOnLine.com](http://www.DrRuizOnLine.com)

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**Steps for Predictable Execution Using DED System**

- Communication
- Diagnosis/ Design
- Wax up & transfer in to the provisionals
- Alter provisionals until patient is satisfied
- Reproduce in Porcelain
- Confirm lab's accurate reproduction
- Psychological management



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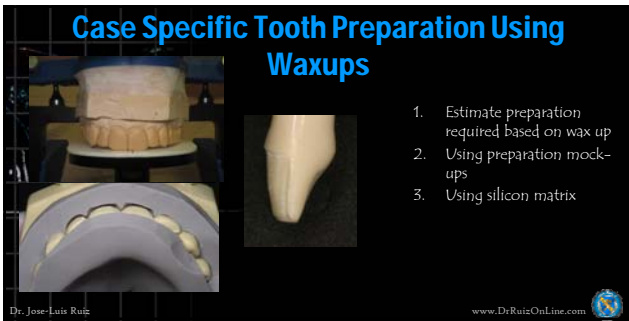
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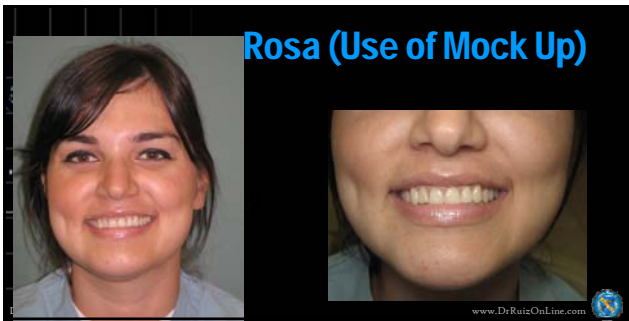
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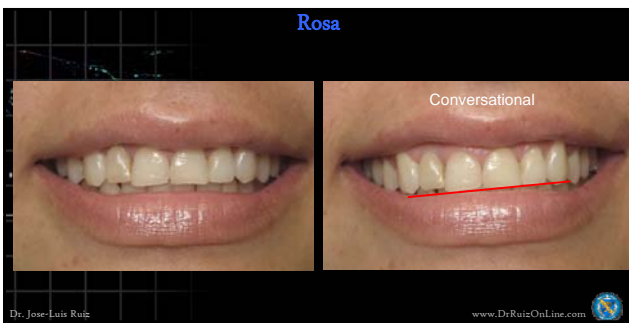
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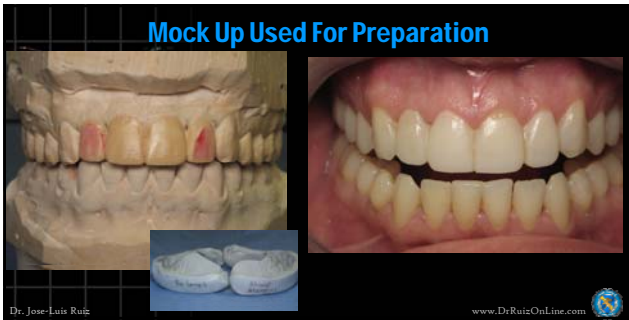
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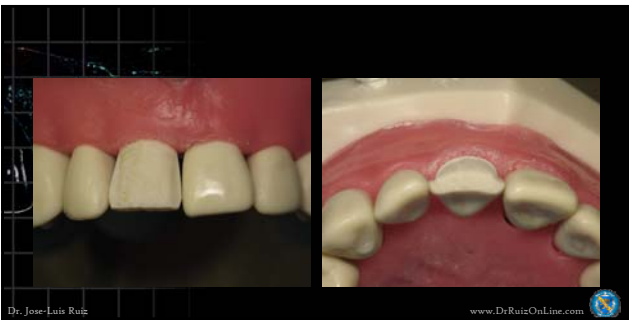
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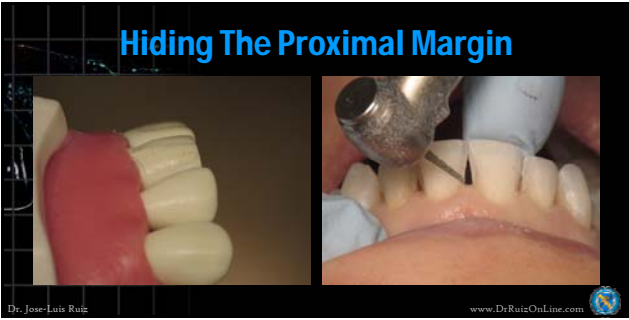
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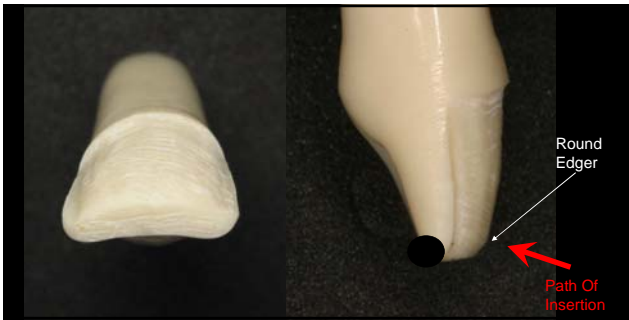
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### Design Benefits

- Tooth supports porcelain.
- Bonding To Enamel
- More tooth conservation.
- Patient prefer it.

Dr. Jose-Luis Ruiz

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### Tooth Conserving Supra-gingival Prep

Figure 2: Retraction, preparation.

Figure 9: Preparation color.

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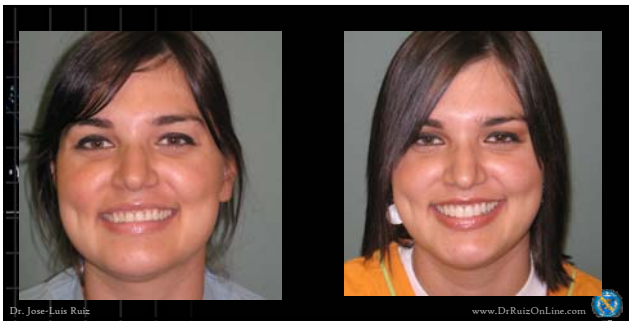
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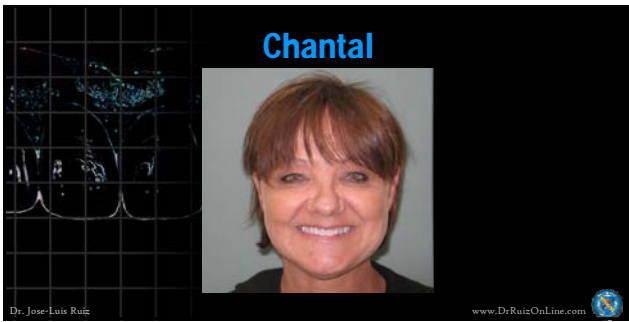
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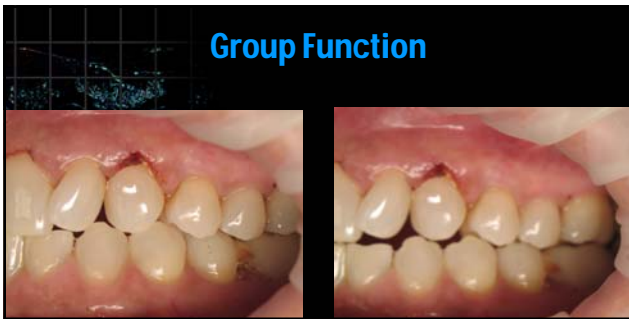
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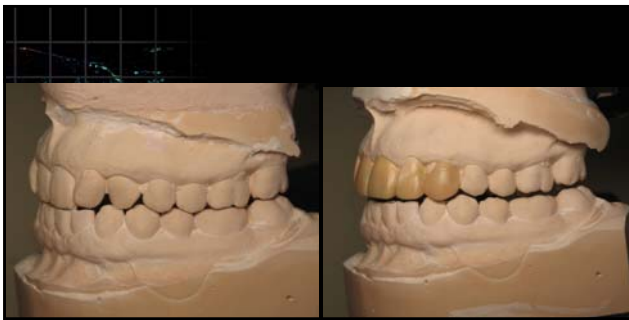
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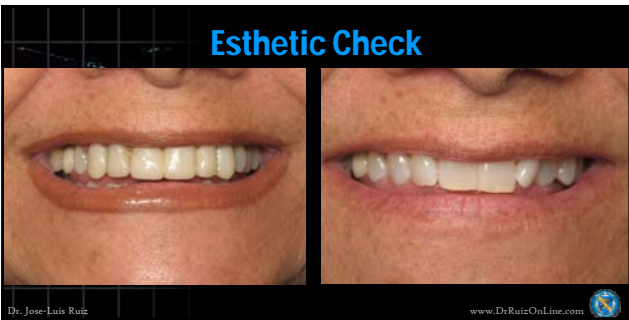
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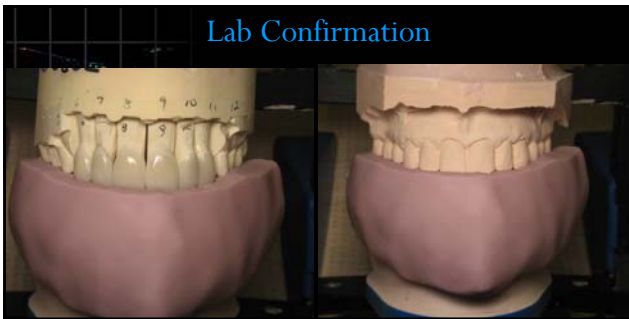
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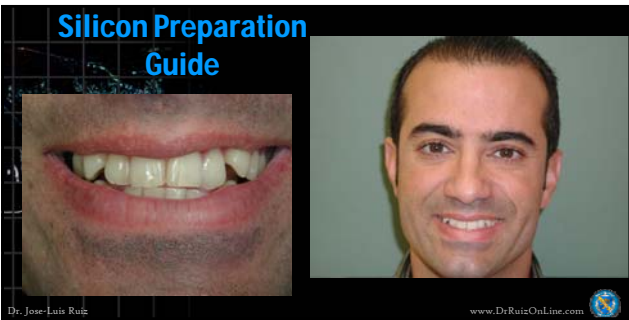
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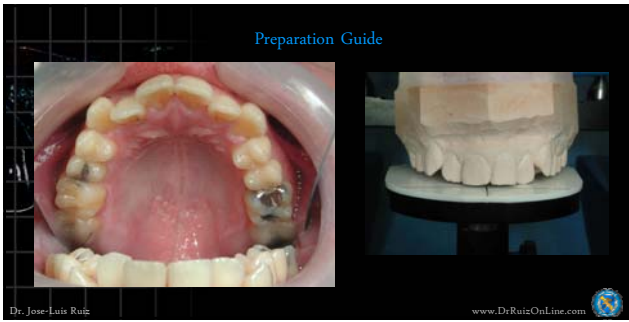
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## Impression With Open Embrasures



◊ Oraseal Caulking (Ultradent)

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## Open Embrasures & Diastemas



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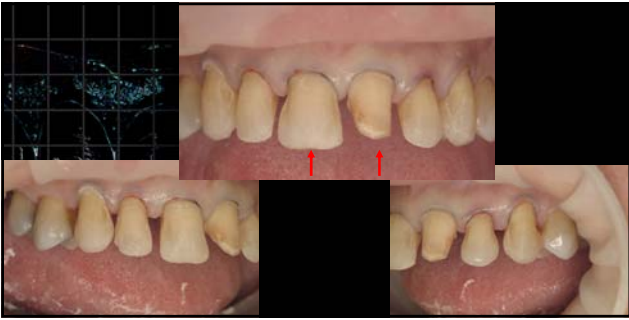
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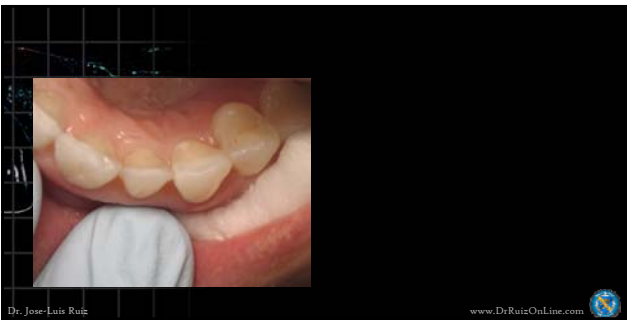
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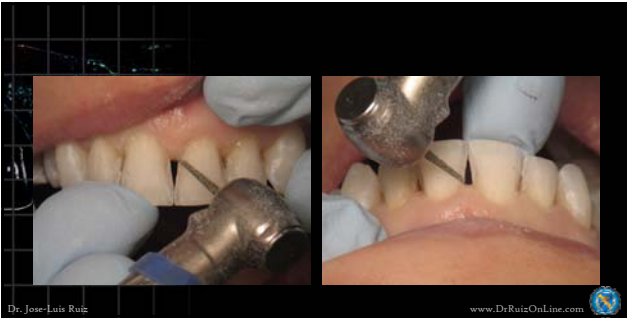
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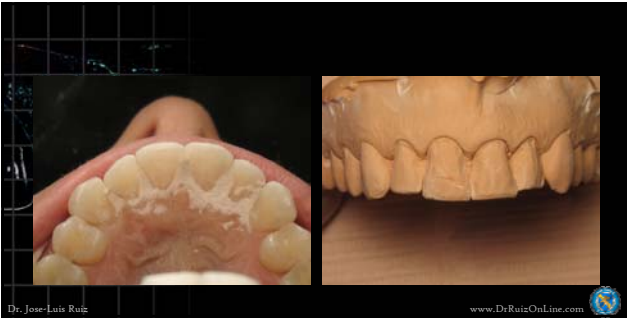
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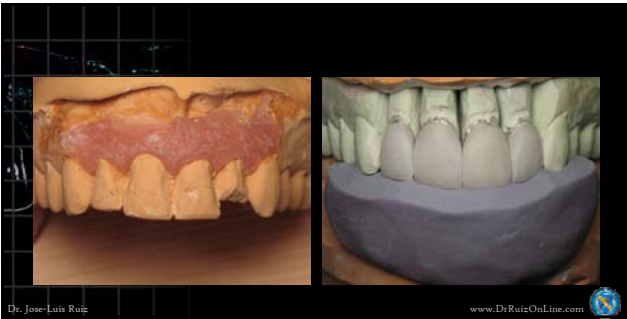
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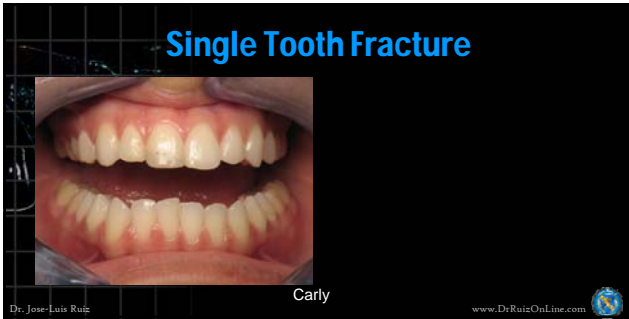
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## 5. Choosing Restorative Material & Color

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### Color...

The final color on Veneers is a combination of:

- Tooth color
- Cement Opacity
- Restoration color & opacity



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### Preoperative Bleaching



- Always bleach before veneers.
- Do not cement veneers within 2 weeks.
- Bleach after veneers if there color difference.

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### Preoperative Bleaching



- Always bleach before veneers.
- Do not cement veneers within 2 weeks.
- Bleach after veneers if there color difference.

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### Translucency & Opacity



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### Managing Difference in Tooth Colors



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Do Not Over Promise



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For Maximum Esthetics PFZ



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PFM?



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### Lab Communication



- Desired shade
- Prep shade
- Desired opacity
- Desired porcelain
- Approved provisionals cast, and bite for cross-bite

Smile Catalog  
LVI (888) 584-3237

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### Provisionals



Thick wax

BisAcrlis

- Integrity (Dentsply)
- Structure (VOCO)
- Venus Temp (Heraeus)

Cement

- TemRex TNE (Temrex)
- Ultra Temp (Ultradent)

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### Provisionals



Options

- Chairside, cemented
- Chairside, leave-ins (Shrink rap)
- Laboratory premade



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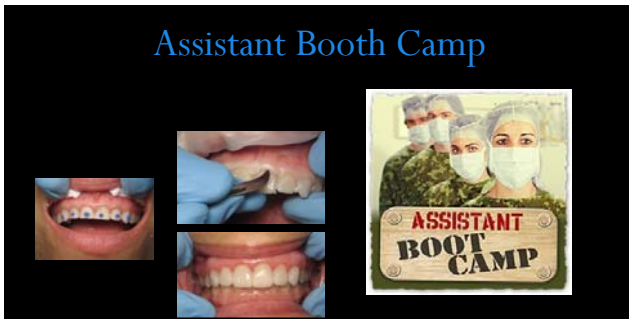
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### Assistant Booth Camp



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### Choosing Restorative Material

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Metal-free Options for Anterior Esthetics Restorations

- Direct composite
- No prep Veneers (Lumineers)
- Minimal prep Veneers (layered porcelain)
- Deep prep or 360 Veneers (pressable)
- Full crown PFZ, cemented



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Direct Composite:  
Tooth Conserving  
Dentistry.



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Practice, Predictable and Beautiful  
Direct Composite Restorations:  
Including Full Mouth Composite  
Rehabilitation  
2 Day Workshop

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BONDED INDIRECT PORCELAIN

<p><b>Layered Feldspathic</b></p> <ul style="list-style-type: none"> <li>• Intrinsic color</li> <li>• Thin (from 4)</li> <li>• More skill technician needed</li> <li>• Slightly less strong?</li> </ul>	<p><b>Pressable Feldspathic &amp; Lithium D</b></p> <ul style="list-style-type: none"> <li>• Monochromatic</li> <li>• 1–1.5 mm of space needed</li> <li>• Easier technique for tech.</li> <li>• Slightly more <b>strong</b></li> </ul>
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BONDED INDIRECT NON-METAL

<p><b>Layered Feldspathic</b></p> <ul style="list-style-type: none"> <li>• VenusCeram</li> <li>• d.SIGN</li> <li>• Ceramco 3</li> <li>• Creation</li> <li>• Noritake</li> <li>• Finesse</li> <li>• Cerinate</li> <li>• Vitadur Alpha</li> <li>• Etc.</li> </ul>	<p><b>Pressables Feldspathic</b></p> <ul style="list-style-type: none"> <li>• Empress</li> <li>• VenusCeram Pressable</li> <li>• Cerinate pressable</li> <li>• OPC</li> <li>• Finesse Pressable</li> <li>• Authentic Pressable</li> </ul> <p><b>Lithium Disilicate</b></p> <ul style="list-style-type: none"> <li>• E-max HT</li> </ul>
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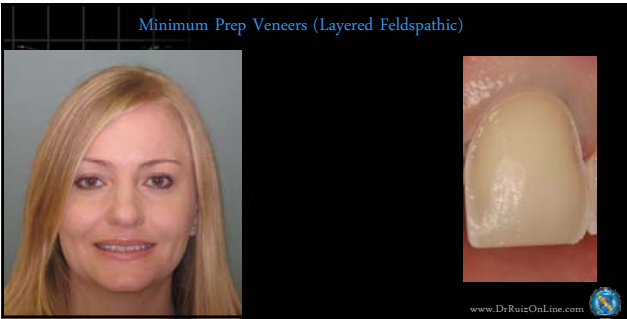
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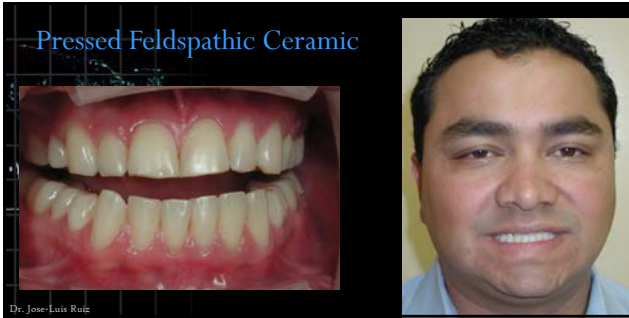
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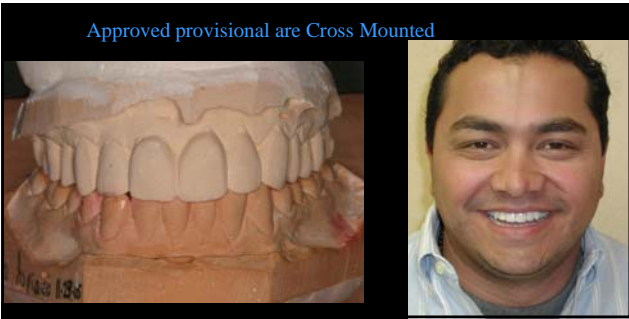
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### 10 Years Later



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### (ONLAYS)

BONDED INDIRECT ONLAYS. INLAYS?

- Full Crown 67.5-75.6%
- MOD Inlay 27.2 %
- MOD Onlay 39.0 %



Edelhoff D, Sorensen JA. Tooth Structure removal associated with various preparations... Int J Perio Rest Dent 2002 Vol 22 No 2:144

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### Metal-free Inlays and Onlays



Ruiz JL, Christensen GJ. Rational for Utilization of bonded non-metal onlays... Dentistry Today 2006 Vo 25 No 9: 80

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**CLINICAL SUCCESS WITH NON-METAL ONLAYS**



Burgh N, & Barry TG. Clinical evaluation of etched porcelain onlays: a 4-year report. Compendium of Continuing Education in Dentistry. 23(7):657-60, 662, 664 2002

Leirstar J, & al. A four to six year follow up of indirect composite Inlay/Onlays. Acta Odontologica Scandinavica Aug. 2003

Reich SM, Wichmann. Clinical Performance of Large all ceramic CAD/CAM...after 3 years. JADA 2004; 135 May:605

Goelho Santos MJM, Mordelli RFL, et al. Clinical Evaluation... Inlays & Onlays...Two Year. Operative Dent 2004;29(2)

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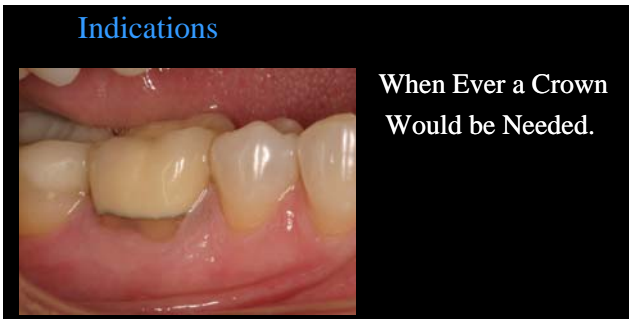
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2 Years later...Longevity?



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PFZ When?

- Dark teeth
- Deep preparations (no enamel)
- Sub-gingival margins



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PFZ When?

- Dark teeth
- Deep preparations (no enamel)
- Sub-gingival margins



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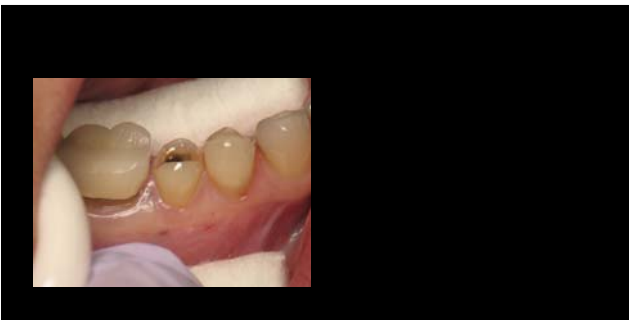
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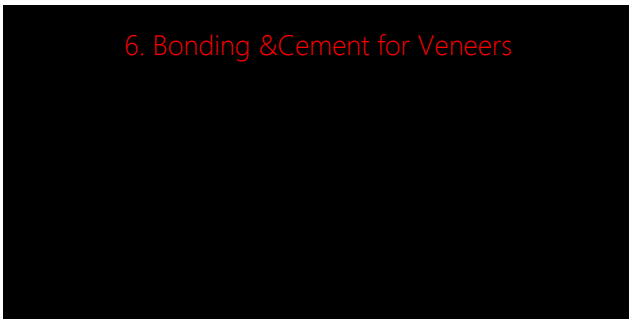
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Resin Light Cure  
Ideal Characteristics?

- Calibra (Dentsply)
- Accolade PV (Danville)
- Choice 2 (Bisco)
- Insure Lite (Cosmodent)
- Clearfil Esthetic Resin Cement (Kuraray)

Excellent... CR Choice  
CR MAY 2009

- Viscosity
- Try in pastes
- Color stability
- Ease of cleaning
- Cost

Simeons M, Lanza A, et al. Polymerization kinetic of a dental composite material...Dent Mater 2005; 21(8) 689-694

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### Dual Cure Cement?

- Calibra (Dentsply)
- Accolade PV (Danville)
- Choice 2 (Bisco)
- Insure Lite (Cosmodent)
- Clearfil Esthetic Resin Cement (Kuraray)



Schulte AG, Vockler A, Reinhardt R. Longevity of ceramic inlay and onlays luted with a solely light-cured composite resin. J Dent 2005; 33 (May): 433-442

Simeone M, Lanza A, et al. Polymerization kinetic of a dental composite material...Dent Mater 2005; 21(8) 689-694

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### Bonding Systems




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### Enamel Adhesion...

1955 Michael Buonocore & 1960s Ray Bowen

- Etch enamel
- 37% phosphoric acid for 15-20 sec
- 15-25 MPa of bond strength.\*

**Mode of Adhesion**

- Micromechanical interlocking
- Wetting
- Interspersion
- Chemical bonding

Anusavice 2003 Skinner's

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### Dentin Adhesives... Generations 1-3

- 30% Organic material
- 20% Fluid
- Smear layer
- Bis-GMA is hydrophobic




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### 2 Families of Dentin Bonding Systems

#### Etch & Rinse

- 2 Bottle (4<sup>th</sup> Generation)
- 1 Bottle (5<sup>th</sup> Generation)



#### Self Etch

- 2 Bottles (6<sup>th</sup> Generation)
- 1 Bottle (7<sup>th</sup> Generation)




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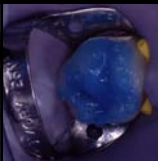
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### 4<sup>rd</sup> & 5<sup>th</sup> Generation Total Etch or Etch & Rinse 1 or 2 Bottles



- *Scotch Bond Multi-Purpose (3M Espe)*
- *Tenure A & B Den-Mat*
- *Optibond FL (Kerr)*
- *Gluma Bond + Desensitizer (Heraeus)*
- *Optibond Solo (Kerr)*
- *PQ1 (Ultradent)*
- *Prime and Bond NT (Densply)*
- *Single Bond (3M)*

- Fusayama (1979) Total etch
- Nakabayashi (1982) Hydrophilic resin and Hybrid layer




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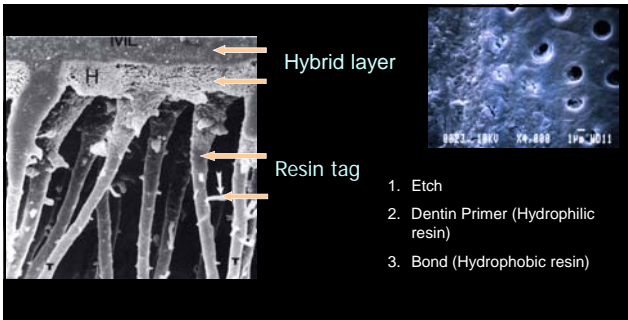
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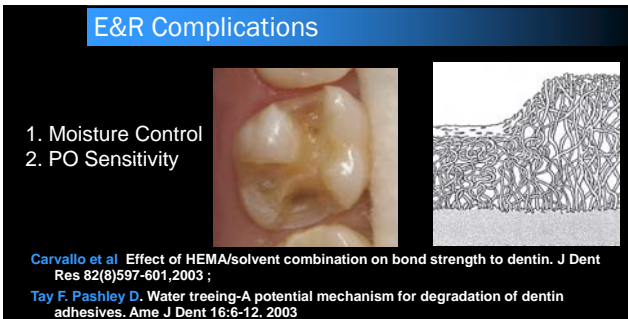
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### PO Sensitivity!!!



CRA December 2003 Vol. 27 issue 11/12

Survey 4446 Dentist:

No post-op sensitivity: SE 24% & TE 12%

More than 11% Severe Sensitivity: SE 4% & TE 17%

Berkowitz G, Horowitz A et al. Postoperative hypersensitivity in class I ...In general practice, Interim results, Compendium 2009 Vol 30:6:356-363  
Perdigao J, et al Total Etch versus Self Etch Adhesives, Effects on Postoperative sensitivity JADA December 2003

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### Bond Strength = Success? What Really Matters?



#### Predictable Clinical Success

- Strong adhesion
- No post-op sensitivity
- Proper seal
- Ease of use
- Durability

#### Literature is Inconsistent

- 1MPa = 1Lb / 4.44 mm<sup>2</sup>
- Shear Bond Strength?
- Microtensile?



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### Sixth & Seventh Generation, Self Etch



- Clearfill SE Bond (Kuraray)
- Clearfill Protect Bond
- Excite (Ivoclar-Vivadent)
- One-Up Bond F (J. Morita)
- Peak SE (Ultradent)
- FuturaBond DC (VOCO)
- G Bond (GC)
- I-Bond (Heraeus Kulzer)
- All-in-One (Kerr)
- Easy Bond (3M ESPE)

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Self Etch

Sixth (2 Bottle) & Seventh (1 Bottle) Generation



1. Etch & Dentin Primer  
2. Adhesive Resin



9023 18KV X4.800 1P WD11

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Is Self Etch Less Good?

6th (2 Bottle) & 7th (1 Bottle) Generation



Predictable Clinical Success

- Strong adhesion
- No post-op sensitivity
- Proper seal
- Ease of use
- Durability

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Advantages... Clinically Forgiving On Moisture!!!



Tay FR, Gwinnett AJ, Wei SHY. Micromorphological spectrum for over drying to oversetting acid condition dentin...Dental materials 1996;12:236

Perdigao J, et al Total Etch versus Self Etch Adhesives, Effects on Postoperative sensitivity. ADA December 2003

Werner J.F. & Tani C. Journal of Adhesive Dentistry. 4(4):277-82, 2002.

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### SE Bond Strength To Dentin?



25.46 MPa



Cura C. & al Effect of different bonding agents on shear bond strengths of composite-bonded porcelain to enamel. Journal of Prosthetic Dentistry. 89(4):394-9, 2003 Apr.  
Turkun LS. The clinical performance of one and two step self etch adhesive systems at one year. 2005 JADA Vol.136 May: 656

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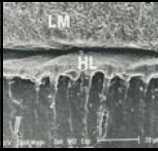
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### Longevity...Degradation of Bond to Dentin



Tay F, Pashley D Water tracing—a potential mechanism for degradation of dentin adhesives. Am J Dent 2003 Feb;16(1):6-12  
Armstrong SR, Vargas MA, et al. Resin-dentin ultrastructure and MT dentin Bond strength after 5 year...Operative Dent 2004; 29(6):705-712  
Burrow MF, Harada N et al. Seven-year dentin bond strength of a total and self-etch system. Eur J Oral Sci 2005; 113:265-270  
Yamauti M, Hashimoto M, et al. Degradation of resin-dentin bonds using NaOCl storage. Dental Materials. 19(5):399-405, 2003 Jul

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### Fatigue Testing...Degradation of Bond to Dentin



Humans Chew an estimated 2700 cycles per day



Marc Braem Microshear fatigue testing of tooth adhesives interface. Journal of adhesive Dent 2007 Vol 9 Supplement 2  
Waidyasekera K, Nikaido T et al. Recenforcement of dentin in self etch adhesive technology: a new concept. J of Dent 2009; 37:604-609  
Armstrong SR, Vargas MA, et al. Resin-dentin ultrastructure and MT dentin Bond strength after 5 year. Operative Dent 2004; 29(6):705-712  
Burrow MF, Harada N et al. Seven-year dentin bond strength of a total and self-etch system. Eur J Oral Sci 2005; 113:265-270  
Yamauti M, Hashimoto M, et al. Degradation of resin-dentin bonds using NaOCl storage. Dental Materials. 19(5):399-405, 2003 Jul  
Tay F, Pashley D Water tracing—a potential mechanism for degradation of dentin adhesives. Am J Dent 2003 Feb;16(1):6-12

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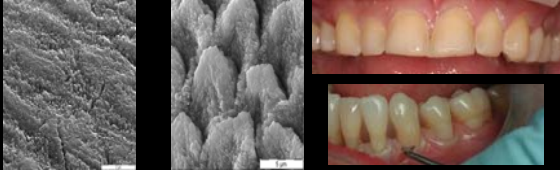
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### Etch Enamel with SE?... The Weak Link



J.L. Ruiz, W. Finger, T. Endo Conventional and self-etching adhesive effects on retention of luting resins Abstract IADR 2004  
 Perdigao J, et al Enamel sealing ability of self-etch adhesives, IADR Abstract #0360 2008  
 Fabianelli A. & al Efficacy of self-etching primer on sealing margins of Class II restorations American Journal of Dentistry. 16(1): 2003 .

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### Enamel Seal?



J.L. Ruiz, W. Finger, T. Endo Conventional and self-etching adhesive effects on retention of luting resins Abstract IADR 2004  
 Perdigao J, et al Enamel sealing ability of self-etch adhesives. AADR Abstract #0360 2008  
 Anauate-Netti C, J. Perdigao et al 2-Year Clinical Evaluation of Self-Etch Adhesives in Posterior Restorations AADR Abstract # 1090

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### Can You Damage Dentin Bond with Etch, using SE Systems?

Group	Description	24 Hrs.	One Month
1	Total-etch CSE	27.5 (5.3) <sup>A,a</sup>	25.6 (7.6) <sup>A,a</sup>
2	Self-etch CSE (Control)	34.4 (6.9) <sup>B,b</sup>	27.6 (8.6) <sup>A,a</sup>
3	Total-etch OFL	29.0 (5.4) <sup>A,a</sup>	21.5 (6.1) <sup>B,b</sup>
4	Self-etch OFL (Control)	26.1 (9.0) <sup>A,a</sup>	23.7 (9.5) <sup>A,a</sup>



Ruiz J.L. Kobashigawa A. AADR 2008 Abstract ID#: 0827

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### Cement & Bond Individually Cured vs. Simultaneously Cure

Cement & Bond	1 Hour	24 Hours
<b>DC Bond &amp; Esthetic Cement</b>		
CEC (self-etch system)	23.8 (4.4) [31A/69C] <sup>a</sup>	45.8
Individual Cure (5.5) [39A/61C] <sup>a</sup>		
Simultaneous Cure (2.8) [64A/36C] <sup>a</sup>	27.2 (5.9) [56A/44C] <sup>a</sup>	43.4
<b>Single Bond &amp; RelyX ARC</b>		
RX (total-etch system)	24.9 (6.0) [30A/70C] <sup>a</sup>	48.8
Individual Cure (2.9) [21A/75C] <sup>a</sup>		
Simultaneous Cure (3.6) [15A/85C] <sup>a</sup>	26.9 (4.1) [06A/94C] <sup>a</sup>	41.6

Ruiz JL, Powers J, Yapp R. "Bond Strength of Resin Cements to Dentin" IADR 2009 Abstract # 1816

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### Good Materials = Bond? Yes, But...



Peumans M, Kanumilli P Clinical effectiveness of contemporary adhesives: a systematic review of current clinical trials. Dent Mater. 2005 Sep;21(9):864-81  
 Sensi LG, Lopes GC, Monteiro S Jr, Baratieri LN Dentin bond strength of self-etching primers/adhesives. Oper Dent. 2005 Jan-Feb;30(1):63-8  
 Soderholm KJ, Soares F Shear bond strength of one etch-and-rinse and five self-etching dental adhesives when used by six operators. Acta Odontol Scand. 2008 Aug;66(4):243-9

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### SE Bonding Technique




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### Caries Elimination & Cavity Cleaners?



Fusayama T. Two layers of carious dentin; diagnosis and treatment. Oper Dent 1979;4:63-70

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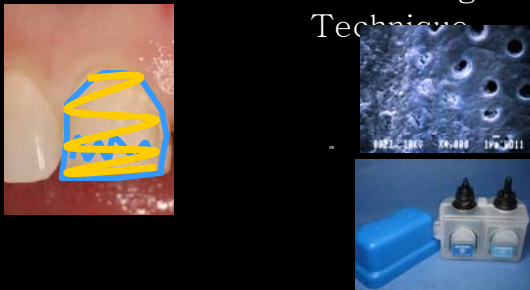
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### SE Bonding Technique



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### Conclusions... SE Vs E&R Bonding Systems

Engendered to Allow for predictable Clinical Success

- Strong adhesion
- Less post-op sensitivity
- Proper seal
- Ease of use
- Durability

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7 Step by Step Bonded Cementation

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Step by Step Cementation



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Place All Veneers with Water or Clear Try-in Paste



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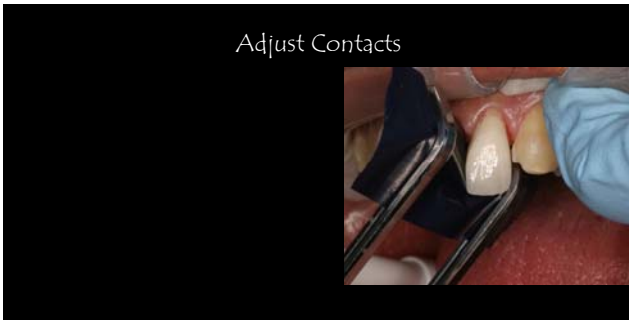
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BEST PORCELAIN TREATMENT?

Effect of ceramic surface treatment on tensile bond strength to resin cement.  
A. Della Bona et al. Int. Jour. of Prosthodontics Nov. 2002

Micro-shear bond strength of dual cure cements to glass ceramics.  
Shimada Y. et al. Dental materials 18(5):380-8, 2002 Jul.

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Tissue Management...Hemostasis

O'Keefe KL, Pinzon LM et al. Bond strength of composites to astrigent-contaminated dentin using self etch adhesives. Am J Dent 2005; 18 (3):168-172

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Rubber Dam?  
Edward Swift Jr. DMD, MS JAED 11-2003



Thordrup M, Isidor F, Horsted-Bindslev P. A 5 year study of direct and indirect resin composite and ceramic inlays. Quintessence Int 2001;32(3):199-205  
Reich S, Wichmann M, Rinne H, et al. Clinical performance of large all ceramic CA-CAM generated restorations 2004 JADA Vol. 135, May 605-612

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Isolation



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Cement 2 at a Time



Garrison

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**Final Cure Using Oxygen Inhibitor**

- Oxygen Inhibited layer is up to 1/2 mm thick.
- Could lead to margin ditching.



SoftFlex Disk (3M ESPE)  
Dia-lite (Brasseler)

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**Final Margin Evaluation... Kincheloe**

- ◊ Hu\_friedy  
Gingival Retractor GRK1



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Thank you

Ruiz@DrRuiz.com

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