

“A New Paradigm in Dentistry... Excellence with Metal-free Posterior Indirect Onlays, Full Crowns and Fixed Prosthesis.”

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The Goal of Esthetic/ Restorative Dentistry...

To provide our patients with natural looking restorations. Restoring teeth in the most conservative manner, looking to extend the life of the teeth and the health of the surrounding tissue.

J.L. Ruiz

The more we cut the tooth, the more we weaken the tooth...

Dan Fisher

New Paradigm of Bonded Dentistry...

- Composite doesn't require minimum depth
- Bonded restorations re-enforces cusps++
- Bonded restorations doesn't need mechanical retention
- Preserves more tooth!!!
- ++Santos et al 2005; Shore et al 2003; etc

Objectives:

- Identify why Metal Free Posterior Restorations are a desirable option
- Identify the difference between Metal-Free Restorative Systems
- Review *techniques* and materials available to achieve success with these restorations

DISADVANTAGES OF PFMs

NOTES: _____

Anything Better? NON-METAL OPTIONS POSTERIOR

1. Cemented Full Crowns
 - Alumina.
 - Zirconia.
 - Lithium disilicate (Anterior).
2. Bonded Inlays & Onlays
 - Feldspathic.

- Pressable/ Lucite.
- Composite

Full Ceramic Crowns

Alumina

- Procera (original)
- In-Ceram Alumina
- WholCeram

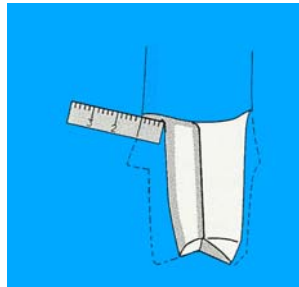
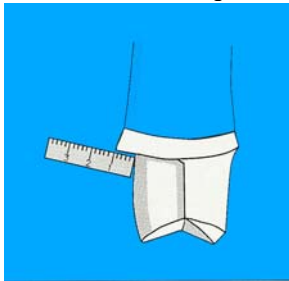
Zirconia

- Lava
- Cercon
- InCeram Zirconia
- Everest
- Procera Zirconia
- e.Max

ADVANTAGES OF FULL CERAMIC CROWNS:

1. ESTHETICS

The Effects of Apical Reduction



CRA 2003 CEMENT PREFERENCE FOR ALUMINA

- Relyx Luting (3M)26.8%
- Panavia 21 & F (Kuraray)18.3%
- Fuji Plus (GC)14.0%
- Variolink (Ivoclar)6.0%
- Calibra (Dentsply)3.3%
- Ketac-CEM (ESPE)2.8%
- Relyx Arc (3M)2.7%
- Nexus (Kerr)2.5%

WHY CEMENTED CROWNS?

HOW STRONG ARE THEY?

Gold Yield Strength 400MPa **

- Zirconia TZP 912 MPa*
- Interim Alumina 429 MPa*
- IPS Empress 83 MPa*

Structural reliability of alumina-, feldspar-, leucite-, mica- and zirconia-based ceramics.
Tinschert J, Zwez D, Marx R, Anusavice K. Journal of Dentistry. 28(7):529-35, 2000 Sep

Ideal Cement for Ceramic Crowns

RMGI

- RelyX Luting 3M ESPE)
- Fuji Cem (GC America)

The efficacy of luting all-ceramic crowns with resin-modified glass ionomer cement. Snider MD & alJADA. 134(5):609-12; quiz 632-3, 2003 May

In vitro microleakage of luting cements and crown foundation material. Lindquist TJ & Connolly J. Journal of Prosthetic Dentistry. 85(3):292-8, 2001 Mar

HOW TO AVOID FAILURES

-
- Ideal preparation.
- Proper coping design..
- Use of correct cementation technique.
- And.....The Influence of Occlusal Disease
In Our Restorations...

Achiving Longevity in esthetic Dentistry By Proper Diagnosis and management of Occlusal Disease.

J. L. RuizContemporary Esthetics June 2007

Is There Anything Better Than Gold Onlays?
Provably not, yet...

Metal-free Inlays / Onlays

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

ADVANTAGES OF NON-METAL INDIRECT ONLAYS

- Conservative preparation.
- Gentle to Gingiva.
- Great esthetics.
- Easy to detect recurrent decay.
- No need for mechanical retention.
- Gentle to opposing teeth.
- Reparable.



% Tooth Removed? _____

Edelhoff D, Sorensen JA. Tooth Structure removal associated with various preparations...*Int J Perio Rest Dent* 2002 Vol 22 N.3 241

WHY LESS POPULAR?

- Not enough track record (Durability).
- Perceived difficult preps.
- Technique sensitive cementation.
- Sensitivity.

CLINICAL SUCCESS WITH NON-METAL ONLAYS, The LITERATURE...

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

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

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

Kramer N, Frankenberger R.

Clinical Performance of bonded leucite-reinforced glass ceramic inlays and onlays after 8 years.

Dental Materials 2005 21,267-271

Clinical Performance of Bonded Porcelain and Composite Inlays and Onlays, using a Self Etch Bonding System, in a Private Practice a 51 month report.

Ruiz JL, Christensen GJ, Sameni, Vargas L. Inside Dentistry May 2007.

Longevity & Patient Education, What is more important?

The restoration lasting a long time?

Or

The tooth lasting a long time?

BONDED INDIRECT NON-METAL

Porcelain & Composite

- Layered Feldspathic
- Pressables
- CAD-CAM
- Composite

DIFFICULT PREPARATION?

Rules For Onlay Preparations

- Rounded angles
- Keep margins on enamel if Possible, preserve Enamel!!!
- Margins must not terminate on areas of occlusal contacts.
- 2 mm of material thickness is minimum desirable.
- When possible keep porcelain under compression, avoid sheer forces.

ESTHETIC MARGIN DESIGN

Disappearing Margin with HeraCeram

SENSITIVITY

BASE AND LINERS

- Vitrebond (3M ESPE)
- Fuji Lining (GC)

Christensen GJ. Tooth sensitivity related to class I and class II resin restorations. JADA 1996 Apr 497 - 498

Ruiz JL, Mitra S. Using Cavity Liners with Direct Posterior Composite Restorations Compendium June 2006

Impression is Easy!!!

TEMPORIZATION

Bis-Acryl... Protemp Etc.

Tem-Rex TNE (516) 868-6221

CEMENTING BONDED RESTORATIONS.

DUAL CURE RESIN CEMENTS

R.M. Foxton et. al. Durability of Dual Cure Resin Cement/Ceramic bond with different curing strategies.

Pfeifer C, Shih D et al. Compatibility of dental adhesives and Dual Cure cements. Am J Dent 2003; 16(4):235

Bonding Systems SE or TE...

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

Sixth & Seventh Generation, Self Etch

Advantages of SE... Less Sensitivity!!!

CRA:

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

Severe SE 4% & TE 17%

Advantages... Simplicity!!!

Effect of relative humidity on bond strength of self-etching adhesives to dentin.

Finger WJ. & Tani C. Journal of Adhesive Dentistry. 4(4):277-82, 2002

Bond Strength & Performance SE to Dentin

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

Degradation of resin-dentin bonds using NaOCl storage

Yamauti M. et al

Dental Materials. 19(5):399-405, 2003 Jul

Tay F. Pashley D

Am J Dent 2003; 16:6-12

Which Bonding System to use for Indirect Restorations?

NOTES:

Luting Non-Metal Indirect Onlays

RubberDam?

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

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

PROTOCOL FOR BONDING COMPOSITE

Effects of grit blasting and silanization on bond strengths of a resin luting cement to Belleglass HP indirect composite

Ellakwa A.E. & al American Journal of Dentistry. 16(1):53-7, 2003 Feb



NOTES FOR CEMENTATION:

EASIER?

Ruiz JL. "Simplifying the Cementation of Porcelain Onlays" *Dentistry Today*,
March 2004 Vol. 23 No. 3: 76-79

RelyX Unicem CRA Newsletter - Sept. 2003

- Clinical Experience Overview
 - 68 Clinicians
 - 4,820 Restorations
 - 1 month to 1 year
- Low Post-Op Sensitivity
 - 0.1% in 4,820 cases
- Low Debond Rate
 - 0.1% in 4,820 cases
 - Easy Clean-Up

Conclusion...

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Thank You.....