

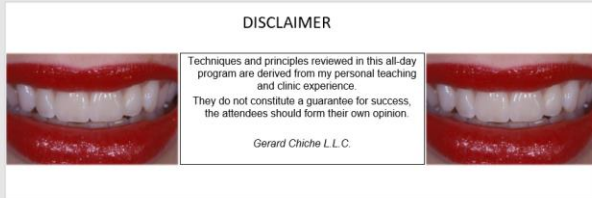
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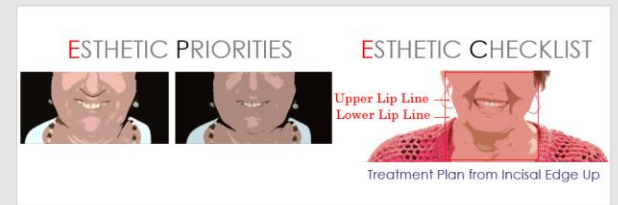
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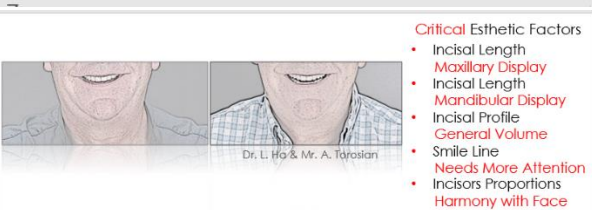
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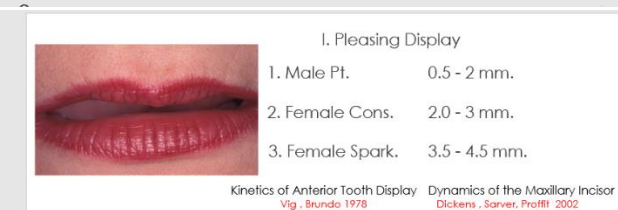
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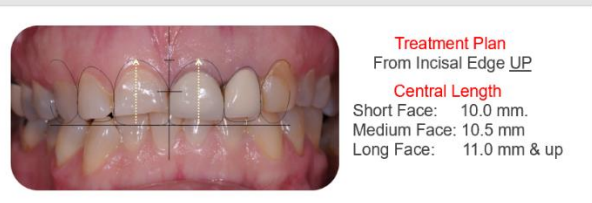
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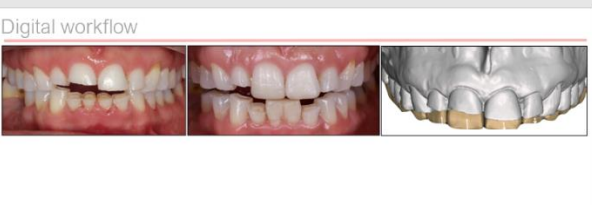
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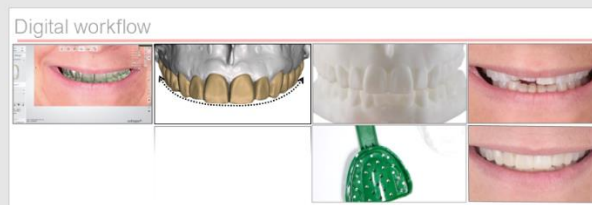
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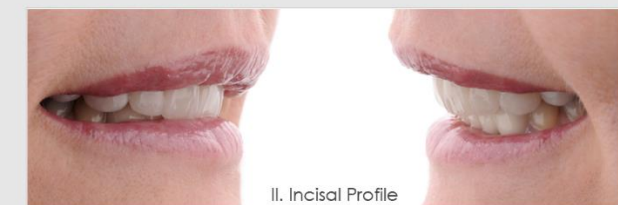
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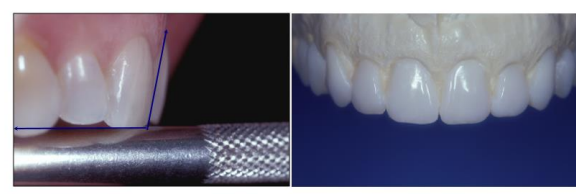


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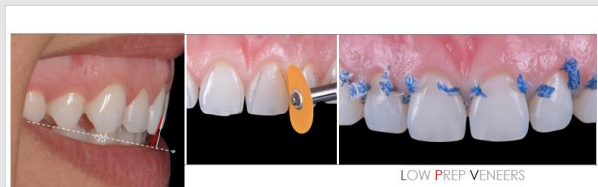
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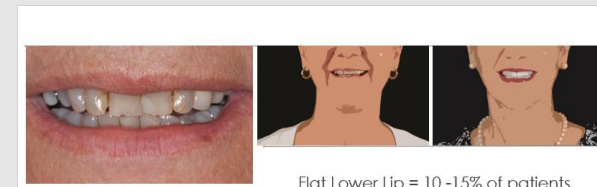
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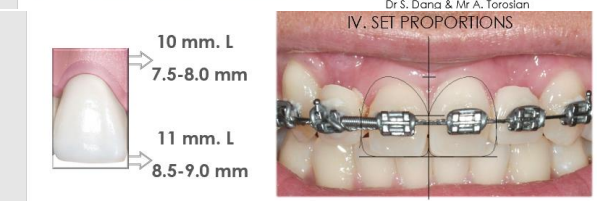
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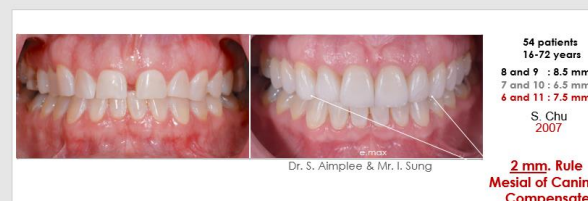
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Veneer Treatment – CEJ is Deep



INCREASED RISK FACTOR

MAXIMIZE ENAMEL

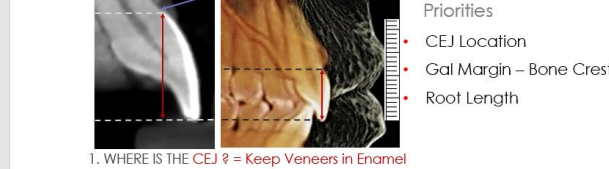


Dr. R. Elkathah, M. Tadros & Mr. A. Torosian





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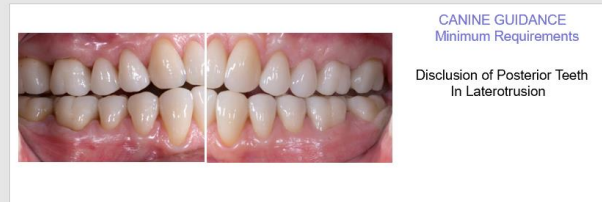
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48



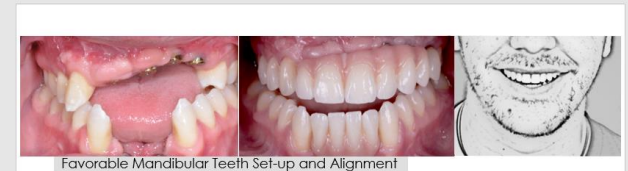
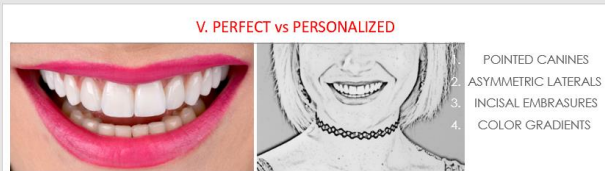
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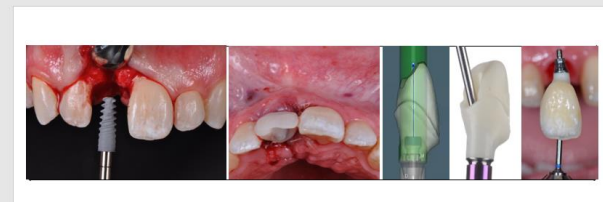
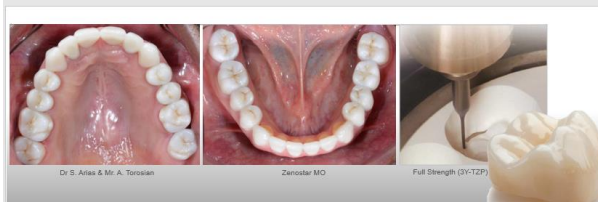
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60



99 Restorations – Two-Year Follow-up – 1 Loosened Screw  
A. Grew 2017



**M Rednagel et al**  
Soft Tissue Stability with Immediate Implants and Contrace Acrylic Abutments. *J Esthet Dent* 2009; 4: 4

**H Su et al**  
Considerations of Implant Abutment and Crown Contour. *Clinical & Subclinical Contour Int J Periodontol* 2010; 30: 333

65

Figure 1 consists of three panels. The left panel is a clinical photograph showing a maxillary anterior implant-retained prosthesis with a temporary crown. The right panel is a clinical photograph showing the final prosthesis with a permanent crown. The central panel is a photograph of the implant and crown components, showing the implant abutment and the crown with a gold-colored base.

66



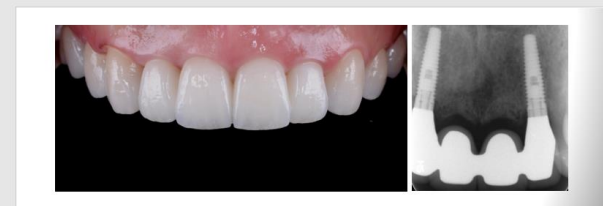
Bone Augmentation / Orthodontic Extrusion = 70% Average  
*Orthodontics E. deLeon*

Dr. Amato et al.  
 Int. J. Oral Maxillofac. Implants 2012



F. Vailati  
2007  
T. Mankoo  
2008  
D. Morton  
2008  
S. Chen  
2008  
X. Vela-Nebot  
2011  
H. Weber  
2012  
H. Katsuyama  
2012

68



69

FULL-STRENGTH ZIRCONIA  
FACIAL CUTBACK

INCISAL EDGE  
SUPPORT

Koldina HML-7-67R  
Dr M. Todoros & Mr A. Torosian

# Veneering Ceramic

## CLINICIANS REPORT

Interviewed: 112 Clinicians • 100% Response

### CER Press by Nitebond—Veneering Ceramic for Zirconia with Least Chipping and Surface Crackling

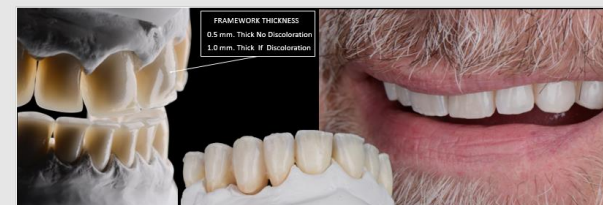
#### Clinical and SEM Appraisals of the Problems

*(Continued from page 10)*

Clinical scoring and percentage of chips and surface cracking in CER Press veneers. \* indicates significant difference at  $p < .05$ .

Clinical Scoring		Percentage of Chips		Percentage of Surface Cracking	
Score	Percentage	Percentage	Percentage	Percentage	Percentage
0	100%	0%	0%	0%	0%
1	0%	0%	0%	0%	0%
2	0%	0%	0%	0%	0%
3	0%	0%	0%	0%	0%
4	0%	0%	0%	0%	0%
5	0%	0%	0%	0%	0%
6	0%	0%	0%	0%	0%
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72	0%	0%	0%	0%	0%
73	0%	0%	0%	0%	0%
74	0%	0%	0%	0%	0%
75	0%	0%	0%</		

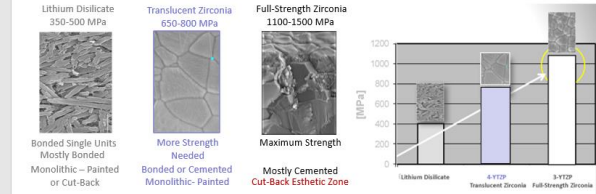
"...CZR Press veneer ceramic for zirconia was the exception with a performance comparable with that of veneer ceramics for metals..."







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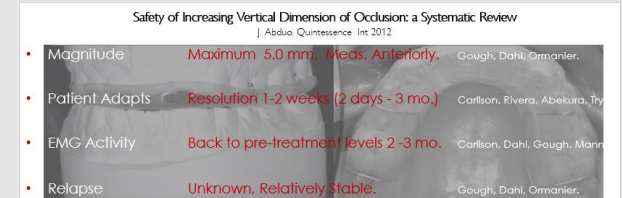
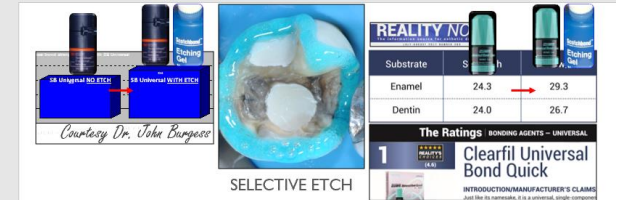
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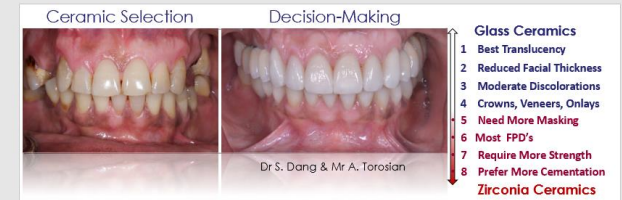
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87





**Clinicians Report & CR Survey on Crown Use**

The Crown Revolution: Are You Confused?

> N = 844

- ~96% general practitioner, majority with 26-40 years of practice
- Crowns type currently placed most:** 45% full-strength zirconia, 21% lithium disilicate, 17% PFM, 8% esthetic zirconia, 6% veneered full-strength zirconia, 2% miscellaneous
- Percent ceramic crown failure to date**
  - Least failure: full-strength zirconia, "esthetic" zirconia, veneered full-strength zirconia, and lithium silicate
  - Next least failure: lithium disilicate
  - Next failure: combination of lithium silicate and zirconia, and polymer alone

91

**5850-016**

- 1 Emax (No Discoloration)
- 2 Lower Incisors
- 3 Thin Teeth, Large pulps

**5850-018**

- 1 Zirconia (layered)
- 2 Emax Discoloration ++
- 3 PFM

92

1. Monolithic Molar Crowns

Dr. S. Arias & Mr. A. Torosian

Zenostar MO

Full Strength (3Y-TZF)

93

2. Screw-Retained Crowns

Screw-Retained FPD = Full-Strength Zirconia

Dr. R. Vega & Mr. A. Torosian

94

3. Fixed Partial Dentures

**Zirconia Connector Size**

- 6.0 mm<sup>2</sup> Ant. Cantilever
- 7.0 mm<sup>2</sup> Ant. FPD 1 Pontic
- 9.0 mm<sup>2</sup> Post. FPD 1 Pontic
- 12.5 mm<sup>2</sup> Post. FPD 2 Pontics
- 16.0 mm<sup>2</sup> Full-Arch Impl. FPD

Raijmakers 2006, Larson 2007, Studardt 2007, Zasse 2012, Telhu, 2012, Kern 2012, Sun 2013, Pozzi 2015

95

4. Simple Cementation with RMGI

MARGINAL GINGIVITIS DEEP MARGINS

96

MARGINAL GINGIVITIS DEEP MARGINS MORE CONVENTIONAL CEMENTATION

100

1. MASSETER MUSCLE MASS 2. FACE TAPER 3. MANDIBULAR PLANE ANGLE

Face Form - Maximum Bite Force

- Proffit WR Occlusal forces in normal and long-face adults.
- Bakke M Ultrasound image of human masseter muscle related to bite force, electromyography, facial morphology and occlusal factors.
- Wallimo A Bite force and dentofacial morphology in men with severe dental attrition.
- Radsher M Contribution of jaw muscle size & craniofacial morphology to human bite force magnitude.

101

MAXIMUM BITE FORCE

- 500 N
- 700 N
- 1000 N

102

Typical Ceramic Fracture = Insufficient Thickness Area (Stress Riser)

Monolithic Zirconia Crown Thickness

Margin of Safety 1.0 mm. and above

Thickness	Fracture Strength (N/A)
0.8 mm. J Lee	2007 (N/A)
1.0 mm. G Jang	2011 (3216 N)
1.0 mm. S Jang	2013 (1780 N)
1.0 mm. C Johanson	2013 (2795 N)
1.0 mm. S Ting	2014 (2429 N)

101

Monolithic Zirconia High-Strength Minimum Thickness

1.0 mm. Ideal CEMENTED

Thickness	Fracture Strength (N)
1mm zirconia	2429
.8mm zirconia	1814
.6mm zirconia	1308

Courtesy Dr. J. Burgess

102

Monolithic Zirconia High-Strength Minimum Thickness

Margin of Safety: 0.8 mm. Acceptable, 1.0 mm. Ideal

Thickness	Fracture Strength (N)
1mm zirconia	2429
.8mm zirconia	1814
.6mm zirconia	1308

Courtesy Dr. J. Burgess

103

When Can we Cement Zirconia?

1. Retentive Preparation
2. Sufficient Occlusal Thickness

Conventional Cement or Adhesive Bonding

When Must we Bond Zirconia?

1. Lack of Retention - Resistance
2. Thin Occlusal - Lingual Area
3. Any Concern with Strength

104

Zirconia Polished 400,000 Cycles

Gloss of Polished Zirconia

Material	Gloss
Feather Life	176
Acis	172
Masener	152
Endo	94
Komet	130

Courtesy Dr. John Burgess

105

Best diamond cutting measured

Komet ZR 6881

2-9 minute cuts

mg

Material	mg
Brass 9856 purple Brass B856 red	63
ZR 6881	123
FAC AAM Inatr 770.BVF Premier	78
Lin et al JDR Abat 2014	63

Courtesy Dr. J. Burgess

JPD THE JOURNAL OF PERIODONTICS

THE use of monolithic lithium disilicate for posterior screw-retained implant crowns

Nicola Hübner, DDD\* and Sarah Coughlin, MSc, DDD\*

ABSTRACT

Objective: This study was designed to evaluate the use of monolithic lithium disilicate for posterior screw-retained implant crowns. The study was conducted in a controlled laboratory setting. The results showed that the use of monolithic lithium disilicate for posterior screw-retained implant crowns was feasible and resulted in high-quality restorations.

Ceramic Fracture = Insufficient Thickness around Screw Channel



109



112



118



121



Relationship between bond-strength tests and clinical outcomes

B. Van Meerbeek, et al.  
Dental Materials 2010

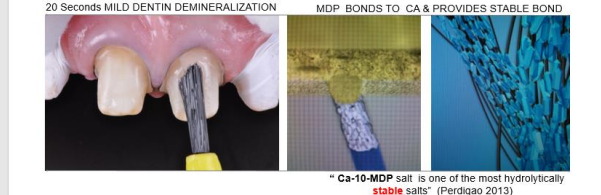
Ca-10-MDP salt







127



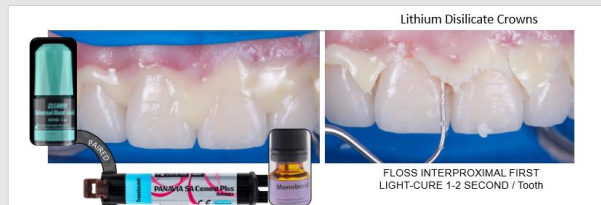
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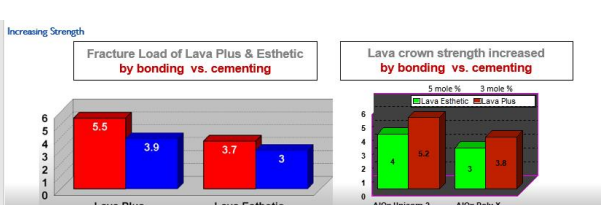
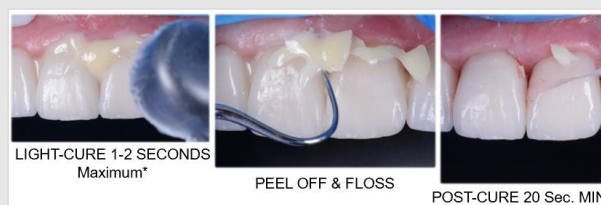
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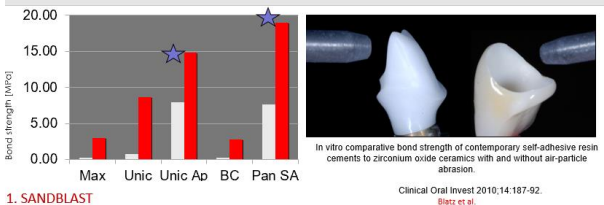
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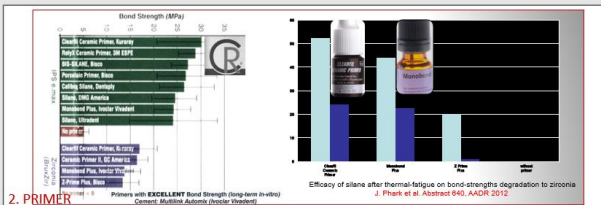
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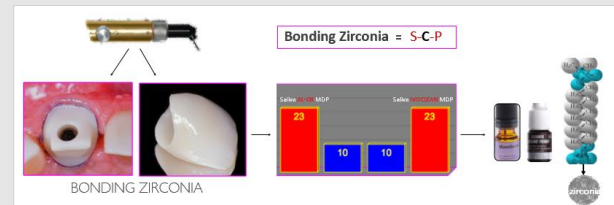
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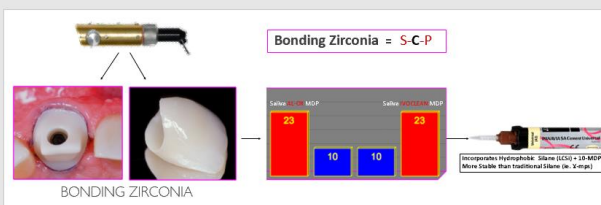
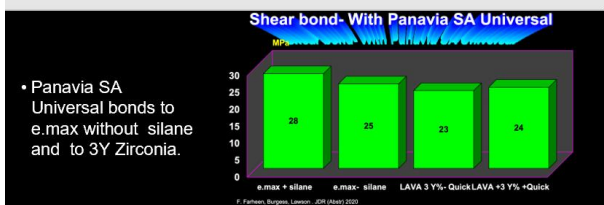
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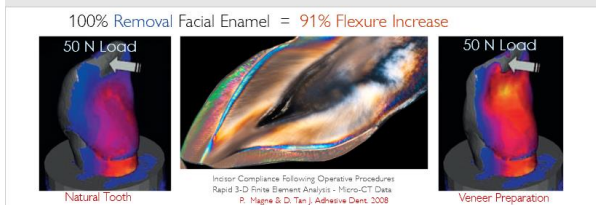
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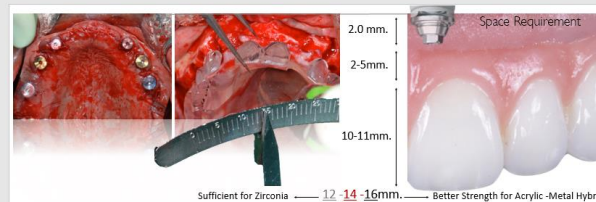
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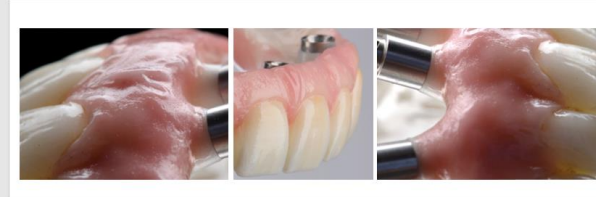
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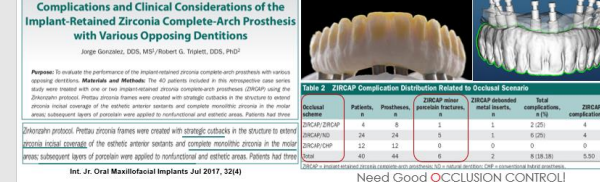
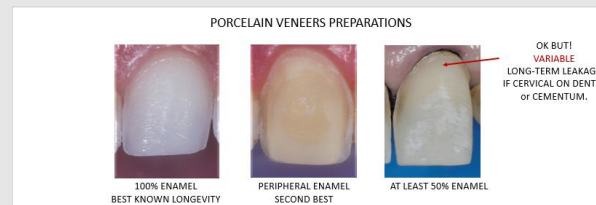
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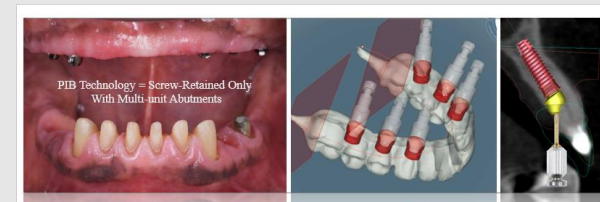
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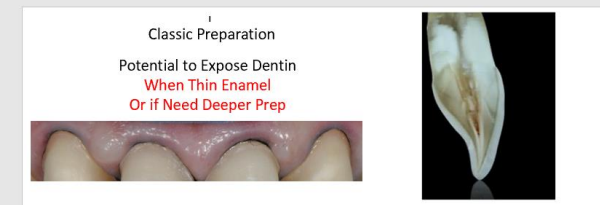
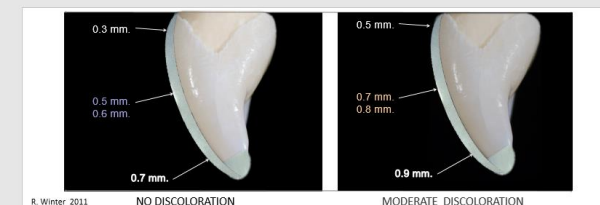
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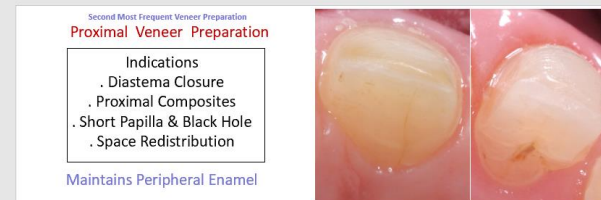
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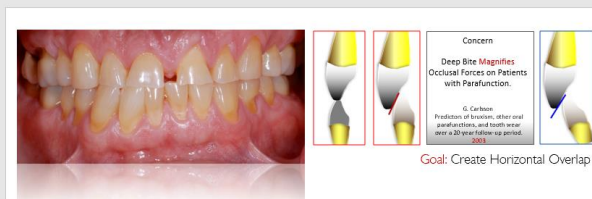
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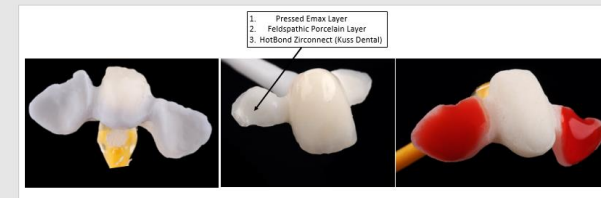
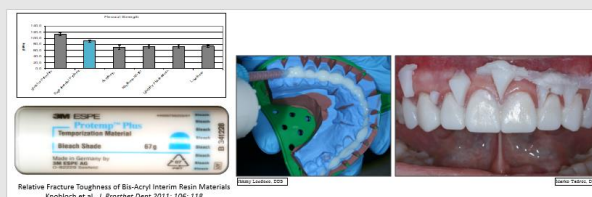
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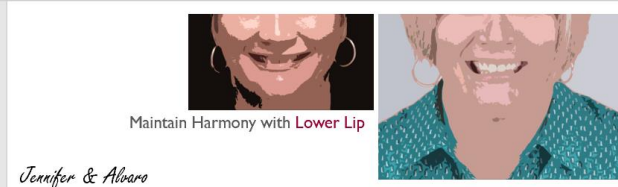




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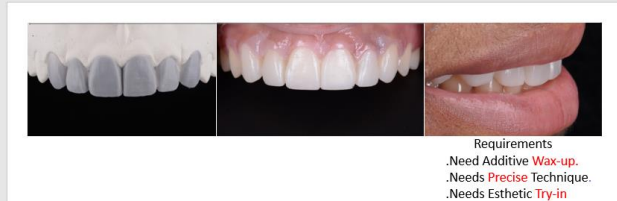
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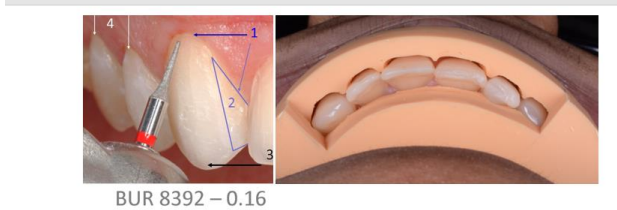
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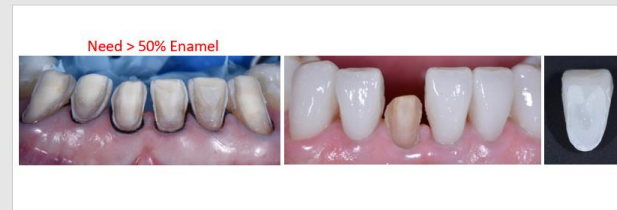
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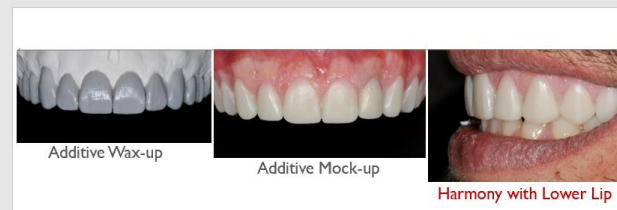
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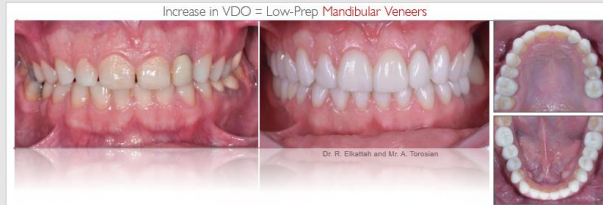
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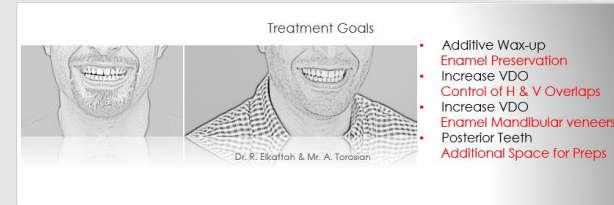




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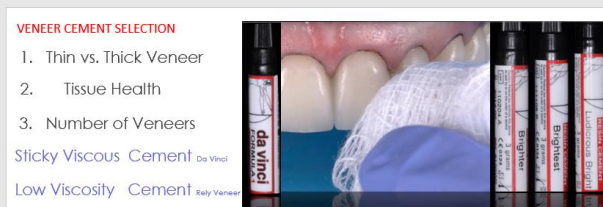
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202



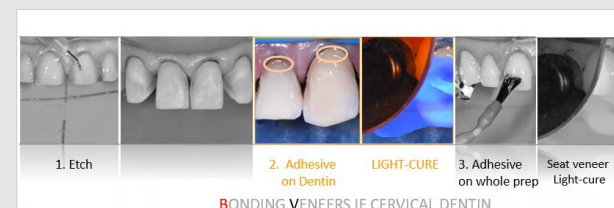
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204



203



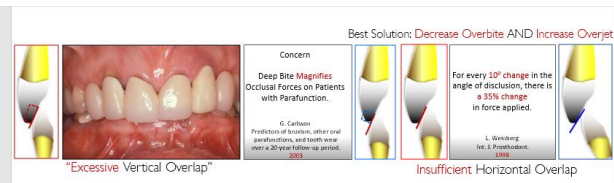
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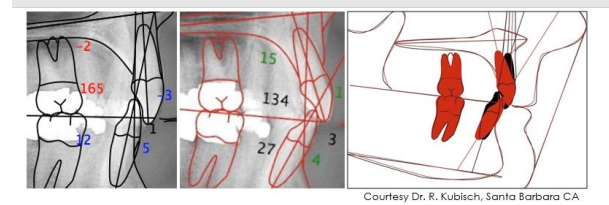
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209



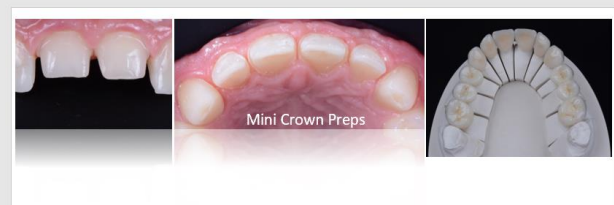
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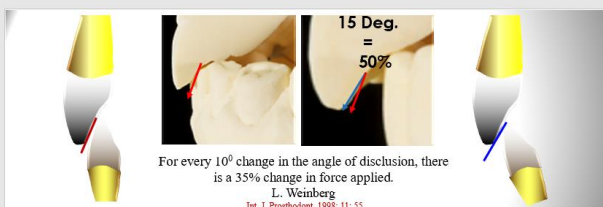
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212



213







Test for 3 Months

217



Prerequisite – No TMJ Symptoms, no clicking

218



1. Prepare & Temporize Anterior Teeth First

2. Deliver Anterior Restorations.

(If Very Heavy Bite – Need Posterior Composite Stops)

3. Then Proceed to Posterior Restorations

219



Fabricating short-term interim restorations from edentulous tissue conditioner material.  
R Eliaresh, J Kim, J Landone  
J Prosthet Dent Online 2015

220



VDO Opening for Sequential Treatment

Pre-Op VDO

Post-Op VDO

221



I. Minimum Wax Up on Occlusal Surfaces  
Uncovered Areas = Vertical Stops

222



2. Etch Every Other Tooth H3PO4 – HF on Porcelain (W. Hall)



3. Bond and Load Clear Matrix with High-Filler Load Flowable Composite



4. Small Vent Holes Over Lingual Cusps Minimize Excess on Adjacent Teeth



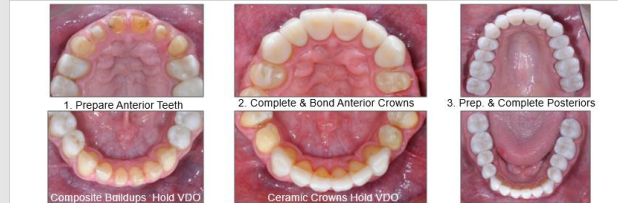
5. Split Clear Silicone Matrix at Mandible to Facilitate Isolation

226



New VDO After Occlusal Refining – Ready for Quadrant Work

227



1. Prepare Anterior Teeth

2. Complete & Bond Anterior Crowns

3. Prep. & Complete Posteriors

Composite Buildups Hold VDO

Ceramic Crowns Hold VDO

228



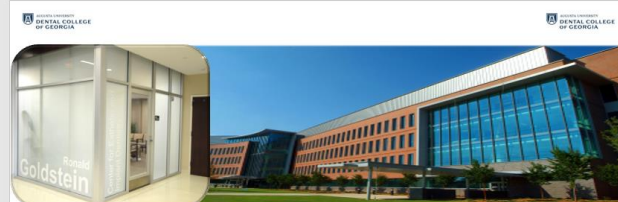
1. PROPER LENGTH  
2. INCISAL PROFILE  
3. SMILE LINE DESIGN  
4. TOOTH PROPORTIONS  
|  
Esthetic Design

229



1. INCISAL LENGTH  
2. INCISAL PROFILE  
3. SMILE LINE DESIGN  
4. TOOTH PROPORTIONS  
5. UPRIGHT CANINES  
6. UPRIGHT BICUSPIDS  
7. SHALLOW GUIDANCE  
|  
Esthetic Design

230



231