

## **STUDY RESULTS SHOW CLINICAL SUCCESS OF SINGLE POSTERIOR ZIRCONIA CROWNS IN PRIVATE PRACTICE**

*“Survival of PFZ crowns on posterior teeth did not differ from PFM crowns in the times interval surveyed”*

Cusp Dental Laboratory, a Boston-based dental laboratory, today announced its participation in a study that surveyed clinical performance of PFZ as compared to PFM. The results of this study will be presented at IADR 2010 in Barcelona<sup>1</sup> on July 16 by Markus B. Blatz, DMD, PhD. Gerard J. Chiche, DDS served as lead clinical consultant for the study.

The objective of the study, in collaboration with Noritake Dental Supply Co., LTD involving over two thousand patient cases among 22 participating dentists (14 PROSTHODONTISTS; 8 GP) in Greater Boston and adjacent states (including New York and Maine) evaluated and compared the clinical success of single porcelain-fused-to-zirconia crowns (PFZ) and conventional porcelain-fused-to-metal (PFM) crowns on posterior teeth in private practice. Private practitioners were asked to review patient documentation and to provide information gained from visual inspection during routine recall appointments/hygiene checks or especially scheduled recall appointments. Findings were indicated on a print survey sheet. A meeting was held with the 22 participating practitioners for calibration purposes.

A total of 2,635 premolar and molar crowns (1944 PFZ; 691 PFM) fabricated by one dental laboratory were followed over intervals ranging from 2 to 57 months by the respective private practitioners using a print survey. In the PFZ group, one veneering porcelain, CZR porcelain layered over zirconia cores (CZR, Noritake), was used in combination with three coping systems (Lava, 3M ESPE; Procera, Nobel Biocare; Katana, Noritake). In the PFM, one veneering porcelain, EX-3 porcelain layered over metal cores (EX-3, Noritake), with precious alloys (52% Au) was used. The private practitioners were asked to review their clinical results and indicate any post-cementation complications (i.e. porcelain chipping, fracture, loosening, etc.), all of which were considered failures. The Kaplan-Meier Survival Analysis was used for statistical analyses.

Results show that the mean survival time for posterior crowns was 52 months with a survival probability of 98.1% for PFZ crowns, 95.8% for PFM crowns, indicating no significant difference between the two modalities for the time interval studied ( $p=0.107$ ). Survival probabilities of individual zirconia coping systems were 97.3% for Lava, 99.5% for Procera, and 99.7% for Katana, which were not significantly different from each other ( $p=0.072$ ). For the 1107 molar and 837 premolar crowns surveyed, mean survival probabilities were not significantly different ( $p=0.586$ ) with 97.5% for molar 98.9% for premolar crowns.

**Conclusions:** PFM restorations are the known standard of strength and reliability. However, this study concludes that within the time interval studied, survival times and survival probabilities of PFZ crowns with Cerabien ZR (CZR) layer used as the veneering material and inserted in private practice on posterior teeth are equal to PFM crowns. Success rates were independent of location whether molar or premolar.

<sup>1</sup> Blatz M, Mante F, Chiche G, Bergler M, Saleh N, Atlas A, Ozer F, Sadan A. Clinical survival of posterior zirconia crowns in private practice. 88th Annual Meeting of the International Association of Dental Research (IADR), Abstract# 134121, Barcelona, Spain, 14-17th July, 2010.

**Table 1: Survival Analysis of PFZ and PFM Crowns**

Group	Total # Crowns	Mean Survival in Days	Probability of Survival in %
CZR Katana	986	1302.4	99.7
CZR Lava	584	1576.3	97.3
CZR Procera ZR	374	1561.7	99.5
<b>PFZ Total</b>	<b>1944</b>	<b>1583.6</b>	<b>98.1</b>
EX-3 52% Au	691	1570.0	95.8
<b>PFM Total</b>	<b>691</b>	<b>1570.0</b>	<b>95.8</b>

**Table 2: The Number of Molars and Premolars**

Molars / Premolars	1 M	2 M	1 P	2 P	3 M	Total
CZR Katana	383	135	196	266	6	986
CZR Lava	209	126	96	141	12	584
CZR Procera ZR	133	102	45	93	1	374
<b>PFZ Total</b>	<b>725</b>	<b>363</b>	<b>337</b>	<b>500</b>	<b>19</b>	<b>1944</b>
<b>Problems</b>	<b>6</b>	<b>4</b>	<b>2</b>	<b>3</b>	<b>0</b>	<b>15</b>
EX-3 52% Au	306	181	77	125	3	692
<b>PFM Total</b>	<b>306</b>	<b>181</b>	<b>77</b>	<b>125</b>	<b>3</b>	<b>692</b>
<b>Problems</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>5</b>