

# PROH Completes Clinical Evaluation of a New 3M™ ESPE™ Temporary Crown

**Study Objectives.** The objective of this study was to clinically evaluate the use of the new temporary crown system, Protemp (3M ESPE™), after two-to-four weeks of clinical function.

**Methods.** 3M ESPE Protemp Temporary Esthetic Crown is a self-supporting, soft, malleable composite material that allows for a custom fit. The crowns were cemented using a non-eugenol temporary cement (TempBond NE, Kerr) to minimize the obtundant effect of eugenol on post-operative sensitivity. A combined lecture and hands-on training session was held for ten practitioners and office personnel participating in the study. Each practitioner placed ten temporary crowns. Baseline and Recall assessment score sheets were completed for each composite temporary crown placed. The baseline review was completed at the crown preparation / temporary crown fit appointment, and the recall assessment was carried out at the appointment for the temporary crown removal and final seating of the permanent crown. The following areas were assessed: retention, health of the adjacent gingival tissues, proximal and occlusal contacts, post operative temperature and biting sensitivity, surface roughness, marginal integrity, marginal discoloration, color match, and surface staining. In addition, practitioners were asked to assess the ease of adaptation and placement of the Protemp crowns compared to their normal technique.

**Results.** The study consisted of 101 subjects attending 10 dental clinics from April 2007 to October 2007. The distribution of teeth included in the study are as follows: Maxillary second molars 5, maxillary first molars 26, maxillary second premolars 9, maxillary first premolars 9, mandibular second molars 17, mandibular first molars 19, mandibular second premolars 13, mandibular first premolars 3. The overall retention loss rate of a temporary crown was 13% (most due to fracture). Specific results were as follows:

**Temperature Sensitivity.** There was no significant change in the overall patient reported temperature pain scores pre-op and post-op ( $p=0.92$ ).

**Biting sensitivity.** The difference between biting sensitivity pre-op and post-op was not significant ( $p=0.81$ ).

**Gingival Health.** There was no overall significant change in gingival health between pre-op and post-op ( $p=.86$ ).

**Anatomic Form.** There was no overall significant change in anatomic form between pre-op and post-op ( $p=.82$ ).

**Number of Attempts.** Among the study participants, 80 percent received a successful crown on the first attempt. There was a significant increase in the odds of re-cement as the difficulty of placement increased ( $p=0.006$ ). In other words, the more trouble the practitioner had in fitting the temporary crown initially, the more likely the temporary crown would need to be re-cemented before the permanent crown seating appointment.

**Surface Stain.** The change in the staining was not statistically significant, although there was a trend towards increasing surface stain between pre-op and post-op ( $p=.08$ ).

**Color Match.** The change in color match between pre-op and post-op was not statistically significant ( $p=.16$ ), although there was a trend towards a more yellow hue with time.

**Marginal Discoloration.** There was a significant increase in marginal discoloration between pre-op and post-op ( $p<.001$ ).

**Marginal Integrity.** The change in marginal integrity between pre-op and post-op was not statistically significant ( $p=.96$ ).

**Surface Roughness.** The difference in surface roughness between pre-op and post-op was not statistically significant ( $p=.11$ ).

**Ease of Use:** Forty-eight percent of practitioners rated the ease of placement to be comparable to their current temporary crown technique, 27 percent rated it better than their current technique and 25 percent rated it worse than their current technique.

**Budget.** \$48,875; all funds used for practitioner reimbursement and PROH study support (none of the OHSU investigators received any funds or salary support).

**Participating Dental Practices.** Kinley Adams, Greg Atack, Barry Evans, Gary Genzer, Mark Jensen, Richard Knight, Scott Nicholson, Mehdi Salari, Shane Samy, and Tom Walker.