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THE EFFECT OF DIFFERENT METAL CLEANING METHODS ON RETENTION OF CAST CROWNS

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ABSTRACT

Statement of problem: Residual zinc oxide-eugenol cement may adversely affect retention of zinc phosphate cement. **Purpose of this study:** was to measure retention of cast restorations cemented with zinc phosphate cement after cleaning the fitting (internal) surfaces from residues of zinc oxide-eugenol provisional cement using different cleaning methods. Material and methods: Sixty standard stainless steel models of a standard complete crown preparation were prepared. Cast crowns using Type III dental alloy (Midas, Jclenko, N.Y, USA) were fabricated then cemented on their respective models using zinc oxide-eugenol cement (Temp Bond, Kerr, CA, USA). They were stored in artificial saliva at 37° for 7 days. The castings were separated from their models using a universal testing machine (Model 1197, Instron, UK). Cleaning of all models was done with a spoon excavator. Specimens were then equally divided into 6 groups of different cleaning methods of residues of zinc oxide-eugenol cement on the fitting surfaces of the cast restorations (hand cleaning, hand cleaning/ultrasonic cleaning, airborne-particle abrasion/ultrasonic cleaning, hand cleaning/ steam cleaning, airborne-particle abrasion/steam cleaning and chemical cleaning). Castings were cemented back using zinc phosphate cement then stored in artificial saliva at 37° for 7 days. Retention was measured using a universal testing machine. Data were statistically analyzed using Kruskal-Wallis, non-parametric one-way ANOVA and post-Hoc, non-parametric Tukey Type test. (Alpha value was set at 0.05). **Results:** Airborne-particle abrasion/ultrasonic cleaning showed the highest crown retention among other methods. Only airborne-particle abrasion/ultrasonic cleaning, hand cleaning/ultrasonic cleaning and hand cleaning/steam cleaning showed significantly higher crown retention than that of only hand cleaning (P=0.027). **Conclusion:** A combination of airborne-particle abrasion /ultrasonic cleaning, hand cleaning/steam cleaning and hand cleaning/ultrasonic cleaning produced significantly higher crown retention values than that of only hand cleaning.

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