

Influence of Polishing Systems on Surface Roughness of Dental Ceramics

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Objective:

Ceramic restorations are frequently adjusted prior to cementation and in the mouth after cementation. A wide variety of polishing systems have been developed recently to enhance the surface smoothness of dental ceramics. The purpose of this study was to compare the effectiveness of various polishing systems on commonly used ceramic restoration materials.

Methods:

The following polishing systems were examined: Cera Glaze Extra (Axis), Extra-oral Dialite (Brasseler), Porcelain Adjustment Kit PN 0301 (Shofu). These systems were applied to specimens of feldspathic porcelains Creation (Jensen), and VM13 (Vident). Disc specimens of dimensions 15mm diameter and 2mm thick were prepared for each ceramic. After firing, the disc surfaces were by roughened with a 860-016 diamond bur (Brassler). The discs were affixed to a calibrated load cell to monitor and control the force applied during polishing. Each combination of polishing system and ceramic was replicated five times. The polished specimens were examined using scanning electron microscopy at 200x and 400x magnification.

Results:

Each polishing system provided acceptable smoothness visually for both porcelains tested, However, SEM examination revealed that all the specimens showed dramatic differences in smoothness after polishing. Differences were noted in the polishing systems within the same ceramic. Axis polishing system provided the smoothest surface on both ceramics. In general smoother surfaces were produced on Creation compared to VM13.

Conclusion:

All polishing systems evaluated were effective in producing smooth surfaces on the porcelains tested. The Axis system yielded the smoothest surfaces.