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Research Article

Pilot Study of Tooth Structure Removed in Primary Molar Zirconia Crown Preparations of Typodont Teeth

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Abstract

Prefabricated zirconia crowns (ZRCs) require a passive fit and more reduction than stainless steel crowns (SSC). To determine the mean and maximum reduction depths in the mesial-buccal and occlusal areas for three ZRC brands and one SSC in posterior primary typodont molars and to compare reduction depths to existing literature to determine the preparation's proximity to pulpal tissue. Four primary maxillary and mandibular typodont teeth (J and S) were prepared according to the manufacturers' guidelines for three ZRCs and an SSC. The teeth were scanned before and after preparation with an optical scanner, and

the mean and maximum depths of reduction for each tooth were calculated in triplicate with custom software and statistically compared among the types of crown. The results were compared to existing data on primary tooth enamel and dentin thickness. Maximum mesial-buccal and occlusal depth respectively of preparation for any ZRC for tooth J was 1.19 mm and 1.58 mm while for tooth S it was 1.06 and 2.07mm Both EZ Crowns and Kinder Krowns required an additional 0.5mm occlusal reduction beyond the manufacturer's recommendation for tooth S. Ideal preparations of ZRCs require more reduction than SSCs. Both EZ Crowns and Kinder Krowns require more reduction than the manufacturer's recommendation for a mandibular first primary molar.

Keywords
Pediatric dentistry; primary molars; zirconia; zirconia pediatric crown