

Thermal image analysis of electrothermal debonding of ceramic brackets: an in vitro study.

Cummings M, Biagioni P, Lamey PJ, Burden DJ; Division of Orthodontics, School of Clinical Dentistry, Queen's University of Belfast, UK. This study used modern thermal imaging techniques to investigate the temperature rise induced at the pulpal wall during thermal debonding of ceramic brackets. Ceramic brackets were debonded from vertically sectioned premolar teeth using an electrothermal debonding unit. Ten teeth were debonded at the end of a single 3-second heating cycle. For a further group of 10 teeth, the bracket and heating element were left in contact with the tooth during the 3-second heating cycle and the 6-second cooling cycle. The average pulpal wall temperature increase for the teeth debonded at the end of the 3-second heating cycle was 16.8 degrees C. When the heating element and bracket remained in contact with the tooth during the 6-second cooling cycle an average temperature increase of 45.6 degrees C was recorded.