Bond strength of light curing composite resin with various lights

王蔚南
Hwang SD;Teng CM;Tsai NC;Hwang HM;Wang WN

Abstract

To evaluate the influence of different light-curing units on microtensile bond strength of resin composite restorations. MATERIALS AND METHODS: Standardized Class I preparations (6.0 x 4.5 mm, 2.5 mm deep) were made in extracted human third molars after abrading the cusps. Resin was inserted in bulk using a 3M ESPE restorative system [Adper Single Bond (DBA)/ Filtek Z250 (RC)]. Both materials were polymerized using different light-curing units: QTH at 540 mW/cm(2) (XL 3000, 3M ESPE); LED at 750 mW/cm(2) (Elipar FreeLight2, 3M ESPE); PAC at 2130 mW/cm(2) (Arc Light II, Air Techniques). Nine different light combinations were developed to polymerize both DBA and RC: QTH/QTH; QTH/LED; QTH/PAC; LED/LED; LED/QTH; LED/PAC; PAC/PAC; PAC/QTH; PAC/LED. Restored teeth were stored in distilled water for 24 h at 37 degrees C and then sectioned, yielding stick-shaped specimens with a bonded area of approximately 0.9 mm(2). Specimens were assessed in a testing machine at a crosshead speed of 1 mm/min. The results were analyzed using two-way ANOVA and Tukey's test at a pre-set alpha = 0.05. RESULTS: The combinations PAC/QTH and QTH/QTH presented the highest bond strength values, and LED/QTH the lowest ($p < 0.05$). Significantly lower values were observed in combinations when the LED light was used to polymerize DBA compared to QTH and PAC lights, irrespective of the light source used to polymerize RC ($p < 0.05$). Same light combinations presented similar bond strength values. CONCLUSIONS: Different light sources influence restoration bond strength. Bond strength is more dependent on the light source used for DBA than for curing RC.