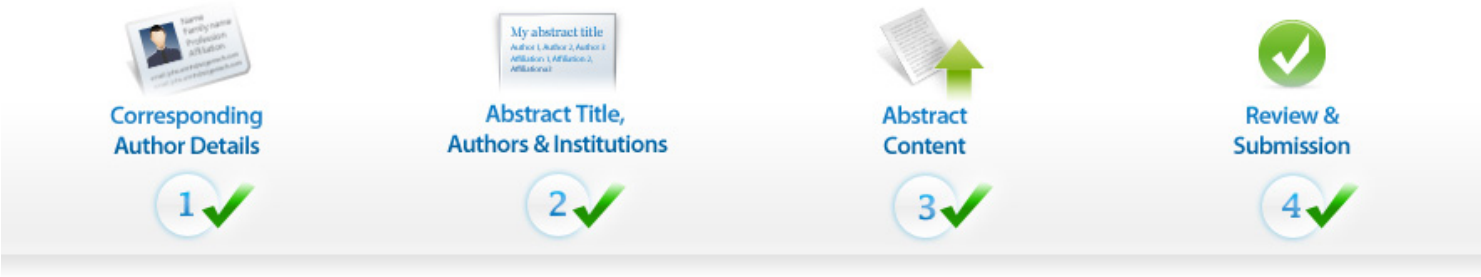

Effect of new laser and LED light curing units on the adaptation of Bulkfil composites in deep preperations

Samar Haghighi , Alireza Sadr
University of Washington School of Dentistry

Main Text

Introduction: Laser curing lights have the advantage of low divergence, coherent and collimated light beam in comparison to LED curing lights. The aim of this in vitro study was to measure the degree of debonding of bulkfill composite at the floor of a cavity in a deep class I restoration, using conventional LED curing light in comparison to monochromatic laser light. Methods: In this study we created 40 specimens using Estelite flow quick resin composite in shape of a cylinderical mold (simulated cavity) and divided them into 8 groups. The experiment consisted of 2 composites: 3M bulkfill and Surefill SDR bulkfill (SF); 2 light curing systems: Monet laser curing light and Paradigm Deep cure (LED); 2 curing distances from composite surface: 1mm and 8mm. 3M Scotchbond Universal Adhesive was applied to the interior of each mold, according to the manufacturer's instructions and cured using Paradigm deep cure. Subsequently, the cavity space was filled with each composite and cured using each curing light at the pre-determined distance. In order to assess the degree of debonding, we used Optical Coherence Tomography (Yoshida Dental OCT) to record the debonding in 3D at the cavity floor during the curing process. Data was statistically analyzed at 0.05 significance level. Results: The laser curing light on 3M composite showed less debonding in both 8mm and 1mm distances, compared to LED curing light. In SF composite, the laser showed less debonding for 8mm distance, but no significant difference was found for 1mm depth compared to LED. Conclusion: Within the limitations of this in vitro study, the new laser curing light could decrease the time required for curing of bulkfill composites while reducing the debonding and improving the adaptation in a deep preparation, particularly when there is a distance between the curing light and surface of the composite.

Corresponding author information

Corresponding author's title: Mrs
First name: Samar
Middle name:
Last name: Haghighi
Suffix:
Email address: samarsh@uw.edu
Institution/organization name: University of Washington School of Dentistry
Institution/organization address: 1959 NE pacific st
Institution/organization address 2:
Institution/organization city: Seattle