

عنوان مقاله:

Exploration of the Customized Fixtures for the Evaluation of Three-point Bending Strength of Dental Resin Composites

محل انتشار:

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خلاصه مقاله:

Introduction: This study aimed to devise customized fixtures for the evaluation of three-point bending strength (TPBS) of resin-based dental composites (RBCs). **Materials and Methods:** A cube-shaped jig made out of wood with dimensions of 105×105×101 mm was prepared in this study. A 20-mm-diameter hole was made in the center of the wooden jig. In addition, a stainless steel probe with 175mm length, 3mm thickness, and 2 mm width was fabricated and then fitted in the upper gripping crosshead of the universal testing machine. Subsequently, bar-shaped specimens of two commercial RBCs, namely Filtek Z350 XT Supreme Ultra Universal (Z350) and Premium Nano-Hybrid Composite (PN) were placed over the center of the jig hole and subjected to TPBS test in accordance with ISO 4049 standards protocol. **Results:** The mean TPBS values of Z350 and PN RBCs were 82 and 86 MPa, respectively. Moreover, the standard deviation values for both mean TPBS values were low indicating the homogeneity of the findings and associated reliability of the employed fixtures. **Conclusion:** The fixtures for the TPBS test of RBCs were successfully designed and developed which would likely facilitate the researchers with a mechanical characterization of dental materials. A machine used for the testing of large industrial materials other than small dimensional dental materials can now be used to test TPBS of RBCs according to ISO 4049 with the help of the invented economical fixtures. This will enhance the quality of teaching and learning of materials science in developing countries

کلمات کلیدی:

Customized fixtures, Fixtures, Resin-based composites, Three-point bending test, Universal testing machine, wooden jig

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