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Disintegration in Water of Newly Developed Temporary Filling Materials

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Objectives: investigate the effect of newly developed temporary filling materials with 4 different zinc oxide and calcium sulfate ingredient ratios on their abilities to disintegrate in water. Methods: Cavit (3M Espe, Seefeld, Germany) was used as control. 20 specimens of each group of newly developed temporary filling materials and Cavit were tested for their disintegration in water as indicated in ISO 3107:2004 standard. The mean value of disintegration in water was statistically analyzed by ANOVA. Cytotoxicity test of all newly developed temporary filling materials were performed by exposure of human gingival fibroblasts to temporary filling material extracts for 24 hrs. Results: the disintegration in water of the newly developed temporary filling materials with 4 different zinc oxide and calcium sulfate ingredient ratios was significantly lower than that of Cavit. Among these 4 ingredient ratios, the newly developed temporary filling materials with zinc oxide: calcium sulfate =1:2 showed the least disintegration in water. These temporary filling materials also demonstrated less cytotoxicity than Cavit. In addition, Cavit revealed acid leachate into water which was not found in the newly developed temporary filling materials. Conclusion: our newly developed temporary filling materials showed less disintegration in water and less cytotoxicity when compared with Cavit. The result suggested that temporary filling material with zinc oxide: calcium sulfate =1:2 can be used as temporary filling material for dental restorations.

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Cutting Efficiency of Dental Burs - A Pilot Study

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Objectives: This study aim to evaluate the cutting efficiency of tungsten carbide burs (TC) and rotary diamond instruments by measuring their rake angle and visual examination of their cutting surfaces respectively, using scanning electron microscopy (SEM). Materials and Method: 60 short and long head pear-shaped TC and 18 round rotary diamond instruments that had been used to prepare < than 5, > than 5 and > than 10 cavities were selected from the 3rd & 4th year dental students, Dental Faculty, University of Malaya. 12 cylindrical and flame rotary diamond instruments were also selected from the 5th year students. The rake angle of TC was measured and surfaces of diamond instruments were evaluated using Field Emission Scanning Electron Microscope (FESEM). Each test group comprised of 10 samples and new burs constituted the control group. The data were analysed descriptively and statistically using Two-way ANOVA, SPSS version 12. Results: The rake angles of control, < than 5 and > than 5 groups were significantly higher compared to > than 10 groups, $p < .05$. Rotary diamond instruments used to prepare < than 5 cavities showed intact diamond particles with distinct cutting facets comparable to control group. Instruments used to prepare > than 10 teeth showed blunt and dislodged diamond particles. Conclusions: The rake angle of TC is significantly lower and diamond instruments showed blunt diamond particles after cutting > than 10 preparations.