

OSC45: Comparative Evaluation of Physical Properties of Nanoparticle Incorporated Addition Silicone with Other Elastomeric Impression Materials

S. Padmasree, R. Vaishnavi, R. Sridharan

Chettinad Dental College and Research Institute, Chennai, India.

Aim: To study the changes in physical properties of commercially available nanoparticle incorporated addition silicone and comparing the same with other commercially available addition silicone impression material and polyether. The hypothesis of the study is that the nanoparticle incorporated PVS material has better flow and wettability when compared to other commercially available PVS material and wettability equivalent to polyether elastomeric impression material.

Materials And Methods: Polyether (group A) the most hydrophilic of other elastomers is used as a control material. Other groups include 2 commercially available addition silicone (GROUP B, C) and nanoparticles incorporated addition silicone (GROUP D). The Pre-set and Post-set wettability of each impression material is evaluated using saliva and a slurry of CaSO₄ dihydrate respectively. The contact angle made by the saliva or CaSo₄ drop with the respective impression material measured and evaluated using drop shape analysis of the frozen digital images. Also each impression material is used to make impression of a standard die. The die is dipped in saliva and impression is made using the above mentioned impression materials. The number of voids in the impression and stone cast poured from the impression are counted and evaluated.

Results: The mean pre-set wettability of group A, B, C, D was 43.040°, 58.796°, 58.394°, 48.435° and the mean post-set wettability of group A, B, C, D was 36.287°, 60.532°, 59.211°, 40.564°. The mean number of voids on the impression for

group A, B, C, D was 0.5,2.1,2.4,1.9 and The mean number of voids on the cast for group A, B, C, D was 0.3,1.2,1.6,0.8.

Conclusion: Poly ether was found to have the best wettability, and the wettability of nanoparticle incorporated PVS was comparable to polyether and was better than other commercially available PVS material. The polyether material exhibited lesser voids. Comparable results were obtained with nanoparticle incorporated PVS and the other two exhibited more voids.

DOI: 10.4103/0972-4052.244637