Latex Gloves and VPS Impression Material (9/05)


Inhibition of the polymerization of vinyl polysiloxane (VPS) impression materials has been reported to occur with the use of latex protective barriers such as gloves or rubber dam material. The purpose of this investigation was to examine the surface of vinyl gloves and gingival retraction cord materials previously in contact with latex gloves for particulate transfer and to identify any contaminants. The study also evaluated the feasibility of contaminant removal with several cleansing procedures commonly used in clinical practice. Four experimental groups (n = 8) were prepared: (1) clean vinyl gloves (control), (2) clean gingival retraction cords (control), (3) contaminated vinyl gloves, and (4) contaminated gingival retraction cord. Microscopic evaluation of the appearance and the characterization of surface particulate contamination were performed for each. Three cleansing protocols were evaluated for efficacy in cleaning vinyl glove surfaces contaminated by latex contact (n = 10); (1) brushing with water, (2) brushing with soap/rinsing with water, and (3) cleansing with rubbing alcohol. The subsequent degree of VPS polymerization inhibition was evaluated subjectively. A chi-square test was used for data analysis (alpha=.05). Particulate sulfur elements and sulfur-chloride compounds were present on the contaminated substrates. None of the three cleansing procedures eliminated polymerization inhibition (P =.33). Residual elemental sulfur remained on all tested surfaces. Particulate sulfur and sulfur-chloride compounds were identified as the particulate contamination that resulted in polymerization inhibition of the tested VPS dental impression material. Removal of these contaminants from the tested vinyl gloves and gingival retraction cord was not possible with the three cleansing protocols tested in this study.

DECS Comment: It has been documented that the chemicals used in the manufacturing process for latex and some synthetic gloves can interfere with the setting of VPS impression materials. Synthetic vinyl gloves apparently do not adversely affect the setting. The presence of free sulfur residue in latex gloves has been suggested as the causative agent. Suggestions for preventing possible contamination and inhibition of VPS impression material polymerization have included using nonlatex vinyl barrier materials and procedures to clean and remove sulfur elements from contaminated surfaces (e.g., gingival and palatal tissues, tooth surfaces). This study suggests there is a risk of contaminant transfer from latex even after a brief indirect contact and cleaning efforts may be unsuccessful. Because of the diverse selection of dental materials on the market, dental practitioners should consult glove manufacturers regarding the chemical compatibility of glove materials.