EFFECT OF DIFFERENT COMMERCIALLY AVAILABLE BONDING AGENTS AND SURFACE ALTERATIONS ON THE BOND STRENGTH OF FACIAL SILICONE TO ACRYLIC RESIN

by

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ABSTRACT

BACKGROUND AND OBJECTIVES: Maxillofacial prosthesis are used to rehabilitate patient with extraoral defects. These prosthesis are fabricated using silicone elastomers and acrylic resin. One of the most common difficulty encountered during fabrication of prosthesis is poor bonding of silicone to acrylic resin. Various adhesive primers are available which improve the bonding between the two. The surface of acrylic can also be altered to increase the bonding. Hence this study was undertaken to evaluate the effect of 3 primers and 3 surface characterization of acrylic surface on bond strength between silicone elastomer and acrylic resin.

METHOD: 96 Cosmesil silicone bonded to heat cure acrylic samples were fabricated of dimension 75×10×3 mm. The 3 primers used in this study were G611, A-330G and cyanoacrylate. Samples without primer were used as control. The 3 types of surface characterization done were retentive holes 1.5mm in diameter and 0.5mm deep, retentive beads of 0.6mm diameter and the third type was plain without any characterization. The samples were then checked for bond strength by subjecting them to 180° peel test on a universal testing machine. The obtained results were then subjected to statistical analysis using 2- way ANOVA and Scheffe's multiple post hoc procedure.

RESULTS: Maximum bond strength was seen for samples in which A-330G primer was used followed by G611 primer. The control group showed minimum bond strength. Surface characterization of retentive holes increased the bond strength considerably as compared to retentive beads and samples without any surface characterization.

INTERPRETATION AND CONCLUSION: The present findings suggest that adhesive primers and surface characterization of acrylic surface help in increasing the bond between silicone elastomers and acrylic. A-330G primer is more compatible with Cosmesil M511 silicone and has better bonding of Comesil to acrylic. Retentive holes made on acrylic surface increase the bond strength considerably than those without any surface characterization.

KEYWORDS: Cosmesil M511 silicone elastomer, primer, surface characterization, bond strength