

Tensile bond strengths of silicone soft liners to two chemically different denture base resins

Type: Article

Abstract:

Silicone-based soft liners can be useful for patients who have difficulty to tolerate the hard-based dentures. However lack of adhesion to the denture base resin can be a problem that limits their clinical use. This study evaluated the tensile bond strengths (TBS) of four silicone soft liners (GC Soft, GC XSoft, Silagum, Mollosil) to two chemically different denture base resins, polymethyl methacrylate (PMMA) and urethane dimethacrylate (UDMA). Specimen consisted of soft liner material self-cured between two square plates of cured denture base resin measuring 20 x 20 x 4 mm. The circular bonding area of soft liner to each plate was 10 mm in diameter. Proprietary primer was applied to the surface of the denture base specimens before bonding following the manufacturers' recommendations. Ten specimens for each denture base-soft liner combination were prepared and tested under tension on a Shimadzu Universal Testing Machine at a cross head speed of 5 mm/min. The mode of failure was determined using a stereo-microscope at magnification of 10x. Two- and one-way ANOVA and post-hoc Dunnett-T3 and t-test were used for statistical analysis. There were significant differences in TBS values for the effect of denture base resins, soft liner and their interaction ($p < 0.05$). The TBS of soft liners to PMMA was significantly higher than to UDMA denture base resins except for Silagum where no significant difference was observed. A mixed mode of failure was more common for all soft liners bonded to PMMA except for Silagum while adhesive failure was more predominant in the UDMA group.

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