Objectives: To compare tensile bond strengths (TBS) of four silicone soft liners to two chemically different denture base polymers (PMMA and UDMA).

Methods: Four silicone soft liners (GC Soft(GS), GC Extrasoft (GXS), Silagum Comfort (SC) and Mollosil Plus (MP)) were processed to PMMA (IMPACT, Dental exports of London, England) and UDMA (ECLIPSE, DENTSPLY, USA) denture base polymers following the manufacturers’ recommended relining method. For each soft liner-denture base combination group, 10 specimens were prepared using a custom-made brass mould. The bonding area was 10 mm in diameter and 3 mm in thickness. The specimens were stored in distilled water (37°C) for 24 hours before testing. The specimens were tested for TBS using a universal testing machine (Shimatzu, Japan) and mode of failure was determined using stereomicroscope at X 10 magnification (Kyowa SD-2PL, Japan). Data were analyzed using Kruskal-Wallis and Mann-Whitney tests.

Results: For PMMA group, there were significant differences in TBS amongst soft lining materials (p<0.05), except between GS (1.94 MPa) and GXS (2.04 MPa). While, in UDMA group, there was non-significant difference in TBS between all soft liners except for MP which showed significantly lower TBS (0.08 MPa). All soft lining materials showed a significantly higher TBS to PMMA than to UDMA (p<0.05), except for SC which showed no significant difference (P>0.05). The mixed mode of failure was the most common in PMMA group. While, adhesive mode of failure was the most common in UDMA group, except for Silagum Comfort which was mostly adhesive in both groups.

Conclusions: The silicone soft liners showed different TBS when used to reline PMMA compared when relined UDMA denture base polymer. Soft lining materials showed lower TBS to UDMA than to PMMA denture base polymer.