

## EFFECT OF RELIEF THICKNESS ON THE BOND STRENGTH OF ACRYLIC RESIN AND METAL BASE

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**Objective:** The aim of this in vitro study is to evaluate the mechanical bonding between the heat cure acrylic resin and the cobalt-chromium alloy for a removable partial denture (RPD).

**Materials and Methods:** A Maxillary cast representing Kennedy's Class IV, was used as master model. Two groups of 12 casts each were made from the master model. The first group of casts were made in dental stone and were used for the construction the RPD. The second group, consists of twelve auto polymerizing resin, which will be used as manikin during the experimental procedure. Six of the stone casts were relieved with two layers of twenty six gauge adhesive wax, whereas the other six were relieved with one layer of wax. Two casts were used for control, one with two layers relief and the other with one layer relief. Their frames were coated with 4-Meta adhesive prior to packing them with 199 Lucitone resin. During wax-up a groove with known dimensions was constructed to receive a special fixture with the same dimension to fit in during the experimental procedure. Each frame was seated in it is corresponding auto polymerizing resin cast. An Instron machine was used for force application till de-bonding occurs.

**Results:** The results showed that in the two relieved layer the RPD received a higher de-bonding force when compared with one layer relief  $P < 0.001$ . The same was observed between the control groups, the one layer relief ( $P < 0.0007$ ) and the two layer relief ( $P < 0.008$ ).

**Conclusion:** It can be concluded from this study that, the increased relief thickness, without jeopardizing the vertical dimension, significantly improves the mechanical bonding of the acrylic resin to the metal base. It was also noticed that the application of 4-Meta adhesive to the control increase significantly the bonding strength.

**Key words:** RPD, Relief, Bonding Strength, Instron.

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