

***Evaluation of acetal resin and cobalt–chromium clasp deformation and fatigue resistance in removable partial denture clasps. An in-vitro study.***

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***ABSTRACT***

**Purpose:** this study was aimed to evaluate the fatigue resistance (amount of clasp deformation) of acetal resin clasps and Cobalt-Chrome (Co-Cr) clasps after attachment/detachment cycles on abutment teeth with two different undercuts.

**Materials and Method:** Twenty models were constructed by placing either an upper 1<sup>st</sup> premolar or upper 1<sup>st</sup> molar inside an acrylic rectangular block. Models were divided according to the abutment teeth into two groups (GI for 1<sup>st</sup> premolars group and GII for 1<sup>st</sup> molars group), 10 each. Each group was divided into two subgroups according to the framework material, SGA for acetal resin clasp and SGC for Co-Cr clasp. Each testing models and its framework were mounted inside universal testing machine (Lloyd instruments Ltd, England). Cycling was carried out for each specimen till 2920 cycles. The data of the amount of clasp deformation after cycling were collected and tabulated. The data were subjected to statistical analysis using student's t and paired t tests. **Results:** After 2920 cycles, the mean values and standard deviations of the clasp deformation for SGIC, SGIA, SGIIC and SGIIA were 0.0532±0.006, 0.007±0.003, 0.04323±0.0048 and 0.0275±0.004 mm, respectively. **Conclusions:** Co-Cr clasps had significant clasp deformation more than acetal resin clasps. Increase the thickness of cross section of the acetal resin clasp more than 1 mm was recommended in case of engaging undercut more than 0.25 mm.