

## ABSTRACT

**Aim :** The aim of this study is to evaluate the stiffness and plastic deformation of clips in four different self-ligating brackets after repetitive opening and closure movements.

**Materials and Methods:** In this study 80 samples of self-ligating brackets were included and they were divided into two groups. Group 1 consisted of 40 samples of passive self-ligating brackets and group 2 comprised of 40 samples of active self-ligating brackets. The group 1 and group 2 were subdivided into group 1a, 1b and group 2a and group 2b respectively. Group 1a comprised of JJ self-ligating brackets, group 1b comprised of Damon brackets, group 2a comprised of Rabbit force brackets, group 2b comprised of Orthomatix brackets. Each group comprised of 20 self-ligating premolar brackets each. In this in vitro study, opening force of each bracket clip was assumed to be the stiffness of the bracket. Opening force of each self-ligating bracket clip is calculated before and after 50 cycles of repetitive opening and closing movements using a Universal Testing Machine. The comparison of these forces indicates the change in stiffness.

**Results:** Significant reduction in stiffness of bracket clips were found among 4 different types of self-ligating brackets used in this study.

**Conclusion:** More reduction in the stiffness of bracket clips were observed in active self-ligating brackets used in this study and there was no clip breakage (plastic deformation) after 50 cycles of repetitive opening and closure movements among 4 types of self-ligating brackets used in this study.

**Key words:** stiffness, plastic deformation, active clips, passive clips, self ligation