

## Effect of Arch-Wire Qualities and Bracket Design on the Force Systems during Sliding Mechanics

**Authors :** Davender Kumar

**Abstract :** Aim: It is important for the orthodontist to be familiar with the sliding resistance (SR) generated by the ligation method used during the space closure phase with sliding mechanics. To determine new, experimental non-conventional (slide) ligature demonstrates less friction in vitro when compared other ligatures on the market. Methods: Experimental in vitro were carried out to test the performance of the low-friction system with regard to assess the forces released by different bracket-ligature systems with bonded in iron plate mounted on an Instron machine. Results: The outcomes of experimental testing showed that the combination of the low-friction ligatures with the super elastic nickel-titanium and SS wires produced a significantly smaller amount of binding at the bracket/arch wire/ligature unit when compared to conventional elastomeric ligatures. Conclusion: The biomechanical consequences of the use of low-friction ligatures were shorter duration of orthodontic treatment during the levelling and aligning phase, concurrent dentoalveolar expansion of the dental arch, and the possibility of using biologically adequate orthodontic forces.

**Keywords :** archwire, bracket, friction, ligation

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