

ABSTRACT

Aim and Objective: To determine and compare the effects of fluoride prophylactic agents on the mechanical properties and surface characteristics of a space closure rectangular archwires.

Materials and Methods: The rectangular Stainless steel and TMA archwires were immersed in various fluoride prophylactic agents and in artificial saliva (control) for 1.5 hours. Flexural modulus of elasticity (E) and yield strength (YS) of the wires were measured using a three-point bending test in an universal testing machine. The springback ratio (YS/E) was calculated for each wire. Student t-test and ANOVA were used to analyze the mechanical properties. Scanning electron microscope was used to evaluate the surface changes.

Results: Fluoride treatment showed no significant difference on the mechanical properties of both Stainless steel and TMA archwires. Corrosive changes were observed in the surface topography after exposure to the fluoride prophylactic agents.

Conclusions: The results suggest that using a topical fluoride agent with Stainless steel and TMA archwires, damages the surface of the wire, if contributed to prolonged orthodontic treatment. Compared to the gels, mouthrinses showed less corrosive changes on the surface of the archwires. Particularly sodium fluoride mouthrinse showed lesser changes on the stainless steel archwire.

KEY WORDS: Space closure archwires; Fluoride prophylactic agents; Mechanical properties; Surface topography.