

ABSTRACT:

Objective: To investigate the influence of ferrule height on the crown mechanical resistance and stress distribution through the root and luting cement to explain restoration lose and root fracture pattern. **Material and methods:** Threedimensional models of an adult maxilla and root of incisor tooth were developed from a Computed Tomography scan images. Periodontal ligament, luting cement, crown and custom post were reconstructed on the computer . A static load of 50N was applied to the crown at 70° to the occlusal plan. **Results:** Design with no ferrule had the most crown displacement and 2mm ferrule had the least. Also 2mm ferrule design had the lowest root and luting cement stress **Conclusion:** The study suggests that a ferrule increases mechanical resistance of crown. Furthermore, a ferrule decreases stress in dentin and luting cement; consequently, the fracture and losing restoration risk decline.