Abstract: background and aims: This paper reviews the stress distribution patterns induced by different restorative techniques and materials and the results could be applied in planning the optimal restorations in situations with high probability of failure and fracture. Stresses in dental structures have been studied by various techniques, such as brittle coating analysis, strain gauges, holography, 2-dimensional (2D) and 3-dimensional (3D) photo elasticity, finite element analysis (FEA), digital moir interferometric investigation and other numerical methods. A more recent method of stress analysis, is the finite element method (FEM). Finite element method is able to reveal the otherwise inaccessible stress distribution within the tooth-restoration complex and it has proven to be a useful tool in the thinking process for the understanding of tooth biomechanics and the biomimetic approach in restorative dentistry.

Discussion: the final goal in restorative dentistry is to restore a defective tooth structure to match the intact tooth in fracture strength and stress distribution. In this review article collected data from the literature discussed with regard to restorative materials, preparation design, tooth restoration interface and post properties including substance, diameter and length