

THE EFFECT OF DIFFERENT TYPES OF POSTS AND CROWNS ON FRACTURE STRENGTH OF ENDOTICALLY TREATED TOOTH

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ABSTRACT

The present study was done to evaluate the fracture resistance of endodontically treated teeth with different types of posts and crowns. The endodontically treated teeth were randomly divided into four groups according to the type of post (Zirconia, carbon fibre, Titanium and Alumina post). Then the groups were divided into two subgroups according to the type of crown, In-Ceram crown for one subgroup and In-Ceram spinal crown for the other subgroup. The highest failure load was recorded in case of titanium post and the lowest failure load was in the case of Zirconia post. In-Ceram alumina crown showed higher fracture load than In-Ceram spinal crown. Scanning electron microscope of the fracture specimens showed cohesive fracture within the porcelain.

INTRODUCTION

Many methods have been described for the construction of posts and cores. A post is selected to match the dimensions of the canal⁽¹⁾.

Materials used for core restoration after endodontical treatment include silver amalgam, glass-ionomer, and composite resin. Amalgam is inconvenient when used with all ceramic restoration due to its dark appearance. Glass ionomer core material is brittle and lack inherent strength. Composites have become popular for core reconstruction and offer several advantages⁽²⁾.

Therefore the present investigation will be done for the evaluation of the mechanical performance of different types of posts and all ceramic restorations (In-Ceram Alumina and In-Ceram Spinal).

Restorative treatments depend on the amount of remaining tooth structure. The major changes in endodontically treated tooth include loss of tooth structure and altered physical characteristics. The decreased strength seen in endodontically treated teeth is primarily due to the loss of coronal tooth structure and the degree of flaring of root canal treatment. Endodontic access into the pulp chamber destroys the structural integrity provided by the coronal dentin⁽³⁾.

The internal moisture loss is approximately 9% and it is greater in anterior teeth than in posterior ones. Loss of moisture and loss of dentin toughness compromises endodontically treated teeth⁽⁴⁾. The darkening of a non-vital tooth may be due to inadequate endodontic cleaning and shaping of the

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