# FRACTURE RESISTANCE OF ENDODONTICALLY TREATED TEETH RESTORED WITH TWO POST SYSTEMS FOLLOWING INTRACORONAL BLEACHING

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# مقاومة الاسنان المعالجة جذرياً و المرممة باستخدام نوعين من الاوتاد للكسر بعد التبييض الداخلى للتاج


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# Introduction

Esthetics is considered to be the main concern of most of the dental patients, the aim of a nice smile and white teeth is their demand in the dental clinics and therefore; the principle challenge facing dentists is how to obtain optimum esthetics combined with proper function of teeth.

Intrinsic changes in endodontically treated teeth might be due to intra-pulpal hemorrhage, products of tissue decomposition, inadequate coronal access that maintains chromophore materials inside the pulp chamber as a result of incorrect cavity cleaning and dressing placement[(1).]

For a long time, the esthetic treatment of discolored teeth required invasive procedures such as jackets and crowns, bleaching techniques offer a conservative treatment alternative for discolored teeth[(2)].

The use of a variety of bleaching techniques has attracted much interest from the profession, as they are relatively non-invasive and simple to carry out. Contemporary bleaching systems are based primarily on Hydrogen peroxide (HP) or one of its precursors, notably Carbamide Peroxide (CP), and these are often in combination with an activating agent such as heat or light. Bleaching agents can be applied externally to the teeth (vital bleaching), or internally within the pulp chamber (non-vital bleaching)[(3)].

Bleaching agents act by an oxi-reduction reaction with darkened substrate. This process depends on temperature, pH , light and the

presence of metals. When the whitening agent is placed into the pulp chamber, reactive oxygen is released; the colored substance is chemically reduced and transformed into a colorless material [4].

There is much concern about potential adverse effects of tooth whitening agents [5] like : Cervical root resorption [6], increased dentin permeability [7], reduced microhardness of enamel and dentin[8], decreased coronal fracture resistance of endodontically treated teeth [9] and possible adverse effect on bonding of tooth structure with adhesive resins [10] .

The adverse effects of bleaching are still a major field of research in order to reach the desired esthetic effect of tooth whitening with the least adverse effect on sound tooth structure.

## Review of Literature

Endodontically treated teeth usually suffer from multiple problems following the treatment, such problems like decreased fracture resistance due to loss of tooth structure during the procedures of access cavity, mechanical preparation and removal of caries, so a special care is directed towards the restoration of such teeth in a manner that restore them in good function in the oral cavity.

Another problem which faces the endodontically treated teeth is the loss of esthetic appearance due to discoloration of such teeth, either from haemosidrin pigmentation of the tooth structure, or due to the remnants of root canal filling materials that may remain in the pulp chamber[(1)].

Application of bleaching material intracoronaly is considered as the walking bleach technique, that involves the application of a bleaching agent to the dentin of the pulp chamber between dental visits [(11)].

A mixture of sodium perborate and distilled water has been extensively used as an effective agent for intracoronal bleaching. In order to enhance bleaching efficacy, 30% hydrogen peroxide was suggested as a substitute for water **[(12)].**

Although concentrated hydrogen peroxide (25–35%) is efficient for bleaching teeth with or without vital pulp, it has been associated with undesirable complications . Another bleaching agent, 35–37% carbamide