# Fracture Load of Two CAD/CAM Ceramic Veneers with Different Preparation Designs

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# قابلية تحمل الكسر لمادتي كاد-كام للكسوة الخزفية بتصميمات تحضيرية مختلفة

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بسم اللّه الرحمن الرحيم

{قالوا سبحانك لا علم لنا إلا
ما علمتنا انك أنت العليم الحكيم}

صدق اللّه العظيم

سورة البقرة {٣٢}

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# DEDICATION

*I would like to dedicate my thesis to my parents & husband…*

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# INTRODUCTION

The public's demand for the treatment of unaesthetic anterior teeth is steadily growing. Accordingly, several treatment options have been proposed to restore the aesthetic appearance of the dentition. For many years, the most predictable and durable aesthetic correction of anterior teeth has been achieved with full crowns. However, this approach is undoubtedly the most invasive, requiring removal of large amounts of sound tooth structure and resulting in possible adverse effects on the pulp and adjacent periodontal tissues.

The introduction of multi-step total-etch adhesive systems, along with the development of high-performance hybrid resin composites has led to a more conservative restorative technique. Resin composite veneers can be used to mask tooth discoloration and/or to correct unaesthetic tooth form and/or position. However, such restorations still suffer from a limited longevity, since resin composites remain suspect to discoloration, wear and marginal fractures.

In search for more durable aesthetics, porcelain laminate veneers have been introduced. Several studies have proven their long time prognosis in-vivo and high level of patient acceptance. Additionally, in-vitro studies demonstrated long-term retention of porcelain veneers. Key factors for prognosis are the material and the kind of preparation used for such restorations.

The porcelain laminate veneers are considered as an integral part of aesthetic dentistry where stained, mottled, malformed and misaligned teeth are now restored with excellent esthetic results. The laminate veneers are thin ceramic shells that are bonded to the labial surface of anterior teeth.

There are studies concerning the design and thickness of the preparation. Regarding the design of the preparation, basic types have been described: the window, the butt-joint, and the incisal overlap preparations. As far as the thickness of preparation is concerned, the early concepts suggested minimal or no tooth preparation. Nevertheless, current beliefs support removal of varying amount of tooth structure, especially when mild malposition correction is aimed.

Consequently, this study was undertaken to evaluate the effect of three different preparation designs and two CAD/CAM ceramic materials on the fracture load of ceramic laminate veneers.

# REVIEW OF LITERATURE

Conservatism had been introduced to the dental field to preserve the maximum amount of tooth structure. Laminate veneer has been considered as a line of treatment in dentistry.

Laminate is a layer of tooth colored material which is applied on the facial surface of a tooth as an aid of aesthetic restoration.

Porcelain laminate veneers were introduced by ***Pincus*** [(1)] ***in 1938;*** he was the first to describe the use of veneers to enhance the appearance of actors for close-ups in the movie industry. They were temporarily held in place with adhesive denture powder while the actors wear before a camera. The fragile restorations then had to be removed, because no adhesive system existed at that time to provide a permanent attachment of veneers to tooth structure.

***Bunonocore*** [(2)] ***in 1955,*** made a research on acid-etch techniques, combined with the use of filled resin, this enabled the mechanical bonding between etched tooth and filled resins. The use of direct resin veneers was at that time possible. The limitation of the self-curing technique was the limited working time for the dentist to recreate a labial surface before the composite resin chemically cured