



شبكة المعلومات الجامعية
التوثيق الإلكتروني والميكروفيلم

بسم الله الرحمن الرحيم



HANAA ALY



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شبكة المعلومات الجامعية التوثيق الإلكتروني والميكروفيلم



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جامعة عين شمس

التوثيق الإلكتروني والميكروفيلم

قسم

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Bond Strength and Color Stability of Hybrid Ceramic Restoration Repaired with Nanohybrid Composite

Thesis

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بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

قالوا

سبحانك لا علم لنا
إلا ما علمتنا إنك أنت
العليم العليم

صدق الله العظيم

سورة البقرة الآية: ٣٢



Dedication

*I wish to dedicate this work to
my mother and my husband
who I could never done this
without their support and
encouragement and sacrifices.*

List of Contents

Title	Page No.
List of Tables	i
List of Figures	ii
Introduction.....	i
Review of Literature	4
Statement of Problem	38
Aim of the Study	39
Materials and Methods.....	40
Results.....	65
Discussion	69
Summary	77
Conclusion	79
Recommendations	80
References.....	81
Arabic Summary.....	١

List of Tables

Table No.	Title	Page No.
Table (1):	Acid etching according to ceramic type	19
Table (2):	Materials used in this study:	40
Table (3):	Chemical composition of the fine-structure feldspar ceramic network.....	41
Table (4):	Material ratio - ceramic – polymer	42
Table (5):	Physical data of vita enamic blocks ceramic	42
Table (6):	Chemical composition and physical properties of Nano-hybrid composite.....	43
Table (7):	Chemical 1 composition of Scotchbond Universal Adhesive	44
Table (8):	Descriptive statistics of shear bond strength (Mpa).....	65
Table (9):	Mean \pm standard deviation (SD) of shear bond strength (Mpa) for different groups	66
Table (10):	Descriptive statistics of color change (ΔE).....	67
Table (11):	Mean \pm standard deviation (SD) of color change (ΔE) for different groups	68

List of Figures

Fig. No.	Title	Page No.
Figure (1):	Vita enamic CAD blocks.....	41
Figure (2):	Nano hybrid resin Composite.....	42
Figure (3):	Universal bond system	43
Figure (4):	Acid etch & silane coupling agent	44
Figure (5):	Flow chart showing two parts of study.....	46
Figure (6):	(a) Sectioning the ceramic blocks into discs (b) Isomet Diamond saw	48
Figure (7):	Digital caliper	49
Figure (8):	Incubator at 37°C.....	49
Figure (9):	The samples were embedded in acrylic resin	50
Figure (10):	(a) HF acid etching step, (b) rinsing with distilled water for 1 minute & (c) the disc after Etching showing a chalky white appearance	51
Figure (11):	Showing application of silane coupling agent (a,b)	52
Figure (12):	(a) application of universal adhesive (b) curing of universal adhesive	53
Figure (13):	Teflon mold with 2mm thickness	54
Figure (14):	Application of resin composite.....	55
Figure (15):	Repaired samples.....	55
Figure (16):	Thermocycling machine	56
Figure (17):	The shear bond strength test using the universal testing.....	57
Figure (18):	Schematic diagram of shear bond strength test.	58
Figure (19):	Trimming 1mm of ceramic disc	59
Figure (20):	Thickness of the mold containing ceramic disc before trimming.....	59
Figure (21):	Reducing 1mm from ceramic disc inside the mold.....	59
Figure (22):	Vita easy shade	60
Figure (23):	Teflon mold with thickness 1mm	62
Figure (24):	Showing Immersion in staining solution.....	63
Figure (25):	Box plot showing shear bond strength (Mpa) values for different groups.....	65

List of Figures (Cont...)

Fig. No.	Title	Page No.
Figure (26):	Bar chart showing average shear bond strength (Mpa) for different groups.....	66
Figure (27):	Box plot showing color change (ΔE) values for different groups	67
Figure (28):	Bar chart showing average color change (ΔE) for different groups	68

INTRODUCTION

Early in dental field, metal were used as clinical materials for the restorations of different fixed prosthesis. Although metal-ceramic restorations provide strength, form and function, it usually shows unaesthetic appearance from metal underneath. The increasing aesthetic demand in dentistry has led to the development of many ceramics for their aesthetic capability, biocompatibility, color stability, wear resistance and low thermal conductivity. Currently new ceramic materials are resin-ceramic hybrid materials. These materials combine the properties of ceramics, such as durability and color stability, with properties of composite resins, such as improved flexural properties and low abrasiveness ⁽¹⁾.

One of the most common hybrid ceramic is Vita Enamic (VE) which is a resin – ceramic hybrid materials, and its composition is approximately 14% composite distributed into a ceramic network (86 wt%). Vita Enamic is suitable for fabricating inlays, onlays, veneers, crowns for anterior and posterior applications and crowns over implants, minimally-invasive restorations such as no-prep veneers and restorations in areas where space is limited. Hybrid ceramic are less brittleness than a pure dental ceramic as well as abrasion properties superior to that of conventional composite materials, resulting in characteristics similar to those of natural dentition ^{(2),(3)}

Fracture of ceramic may result from trauma, improper design, intraceramic defects, and inadequate tooth preparation, and inadequate occlusal adjustment, brittle behavior of pure ceramic and para-functional

habit.⁽⁴⁾ Replacement is expensive for these restorations, requiring additional time and causing trauma to tooth structure. Thus, intraoral repair can be considered as an emergency treatment for localized fractures. Furthermore, it represents a viable alternative to remake of a fractured all ceramic restoration^{(5),(6)}

Intraoral repair using a Bis-GMA composite can be an alternative method that offers great benefits due to its superior aesthetics, color stability, and ease of application. Various techniques for the preparation of exposed surfaces have also been introduced to improve the bonding qualities between ceramic and resin composites.⁽⁴⁾ The ceramic surface may be prepared mechanically, chemically or with a combination of both methods. The most common and simple technique is acid etching by hydrofluoric followed by application of silane coupling agent⁽⁷⁾.

The bond strength of repair interface determines the longevity and serviceability of the restoration. This bond integrity and durability depend on the type of repair composite as hybrid composite resins and system of surface treatment of ceramic⁽⁸⁾.

Ceramic materials were originally intended for use in anterior restoration where esthetics is the main concern and currently used in posterior region also. In the anterior visible zone, fractured ceramic restoration is considered as an esthetic emergency and requires immediate treatment. Composite resin has become the material of choice for ceramic repair procedure due to their improved mechanical properties, better shade matching and color stability for durable esthetic⁽⁹⁾.

Therefore, this study is conducted to evaluate the color stability and effect of two surface treatments on the bond strength of hybrid ceramic repaired with resin composite.