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شبكة المعلومات الجامعية

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التوثيق الالكتروني والميكروفيلم

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قسم

نقسم بالله العظيم أن المادة التي تم توثيقها وتسجيلها

علي هذه الأقراص المدمجة قد أعدت دون أية تغيرات

يجب أن

تحفظ هذه الأقراص المدمجة بعيدا عن الغبار

HOSSAM MAGHRABY

Effect of Preparation Design and Ceramic Material on the Fracture Resistance of Onlay Restorations

Thesis submitted for the partial fulfillment of the Master's Degree of Science requirements in Fixed Prosthodontics, Faculty of Dentistry, Ain Shams University

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Dedication

This work is dedicated:

To My Grandmother and **Mother**, for all their love, prayers, and sacrifices for educating and preparing me for my future.

To the Soul of My Grandfather, whose affection and support encouraged me throughout life. May Allah have mercy on him.

To My Father, family and friends.....

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symbol	meaning
CAD/CAM	Computer-aided design/computer-aided manufacturing
ZLS	zirconia reinforced lithium silicate
PICN	polymer-infiltrated ceramic network
RNC	resin nanoceramic
UDMA	Urethane Dimethacrylate
TEGDMA	Triethylene glycol dimetacrylate
Bis-GAMA	bisphenol A-glycidyl methacrylate
HF	hydrofluoric acid
Y-TZP	yttria-tetragonal zirconia polycrystal
MOD	Mesio- occlusal distal
MB	Mesio- buccal
DB	Disto buccal
E A	Vita Enamic anatomical preparation
E B	Vita Enamic butt joint preparation (flat preparation)
S A	Vita Suprinity anatomical preparation
S B	Vita Suprinity butt joint preparation(flat preparation)
STL	Standard Tessellation Language

INTRODUCTION

Introduction

Restorative procedures such as decay removal or cavity preparation are accompanied by a reduction in tooth stability, decrease fracture resistance, and increase deflection of weakened cusps[1]. Different treatment options are available, depending on the degree of destruction, either direct restoration with composite or partial indirect restoration. The main determinants in fracture are the restorative material and the geometry of cavity preparation. Cuspal coverage has been known to greatly affect the fracture resistance of teeth restored with onlay restorations. Numerous designs have been suggested for preparing all-ceramic onlays, as influenced by the mechanical and structural qualities of ceramic materials[2].

Anatomical preparation design was suggested to reduce the loss of healthy tooth tissue and decrease dentin exposure areas and to define the margin design which contributes to the quality of the adhesion, enhancing the cutting of the enamel prisms and increasing enamel surface area. In addition, the anatomic preparation design improves the insertion of the restoration during cementation and improve the esthetic outcome between the tooth and the restoration[3]. Flat preparation design can help to transform tensile into compressive stresses. The design also helps to avoid stress peaks and material collections where smooth transitions at flat edges can reduce stress build-up[4]. Due to the high physical properties of indirect restorations, in case of large destruction in