بسم الله الرحمن الرحيم

MONA MAGHRABY

شبكة المعلومات الجامعية

التوثيق الالكتروني والميكروفيلم

MONA MAGHRABY

شبكة المعلومات الجامعية

التوثيق الإلكتروني والميكروفيلم

جامعة عين شمس

التوثيق الإلكتروني والميكروفيلم

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MONA MAGHRABY

STRESS ANALYSIS OF TWO DIFFERENT ATTACHMENTS FOR A SINGLE IMPLANT RETAINED MANDIBULAR OVERDENTURES IN THE MIDLINE

(Invitro Study)

A thesis submitted to the Faculty of Dentistry at Cairo University in partial fulfillment of the requirements for the degree of masters in Oral Implantology

Ahmed Hasanin Mohammed Rashad

(Al Azhar University) B.D.S 2009

Faculty of Dentistry

Cairo University

2020

We certify that we have read the present work and that in our opinion it is fully adequate in scope and quality as thesis towards the partial fulfillment of the (**Master Degree**) requirements in (**Oral Implantology**). From

Faculty of Dentistry, Cairo University

Date ……..

Supervisors

Name: **Prof. Dr.Hamdy Abou Elfotouh Hamed**

Position: Professor of Removable Prosthodontics . Faculty of Dentistry, Cairo University

Signature: ……..……...

Name: **Ass. Prof. Dr. Nouran Mahmoud Abdel Nabi**

Position: Assistant Professor of Removable Prosthodontics, Assistant Professor of Prosthodontics

Signature: ……..……...

We certify that we have read the present work and that in our opinion it is fully adequate in scope and quality as thesis towards the partial fulfillment of the (**Master Degree**) requirements in (**Oral Implantology**). From

Faculty of Dentistry, Cairo University

Date ……..

Jury Committee

Name: **Dr. Eatimad Al rekabi Taha**
Position: Professor of Removable Prosthodontics
Faculty of oral &dental medicine
Ahram Canadian University
Signature: ……..……...

Name: **Dr. Noura Mohammed Cheta**
Position :Assistant Professor of Prosthodontics
Faculty of Dentistry,
Cairo University
Signature: ……..……...

Name: **Prof. Dr.Hamdy Abou Elfotouh Hamed**
Position: Professor of Removable Prosthodontics . Faculty of Dentistry,
Cairo University
Signature: ……..……...

Name: **Ass. Prof. Dr. Nouran Mahmoud Abdel Nabi**
Position: Assistant Professor of Removable Prosthodontics, Assistant Professor of Prosthodontics
Signature: ……..……...

DECLARATION

I, Ahmed Hasanin Mohamed Rashad

Declare that this thesis and the work presented in it are my own and has been generated by me as the result of my own original research.

"Stress analysis of Two Different Attachments for a Single Implant Retained Mandibular Overdenturs in the Midline"

I confirm that:

1. This work was done wholly or mainly while in candidature for a research degree at faculty of dentistry; Cairo University.
2. Where any part of this thesis has previously been submitted for a degree or any other.qualification at this University or any other institution, this has been clearly stated.
3. Where I have consulted the published work of others, this is always clearly attributed.
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5. I have acknowledged all main sources of help.
6. Either none of this work has been published before submission.

Ahmed Hasanin Mohamed Rashad

ABSTRACT

Ahmed Hasanin Mohamed Rashad; Stress Analysis of Two Different Attachments for a Single Implant Retained Mandibular Overdenture in the Midline

Under supervision of:

Hamdy Abo Elfotouh Hamed,

Nouran Mahmoud Abdel Nabi

Aim: The aim of this in vitro study is to record the induced micro-strain around one installed implant in the midline of a completely edentulous mandible using strain gauges utilizing an implant retained overdenture with two different types of attachments Ball and CMLOC attachment.

Methodology : An acrylic resin test resin test model representing a completely edentulous lower arch was used The distal part of the residual ridge was covered with silicon based soft liner to stimulate the mucopcriostcum. Steps of complete denture fabrication was followed in conventional manner .Duplication of the finished denture was carried out to be used as a surgical stent .A single implant installed in the midline.After the implant was installed in the acrylic resin cast, the ball attachment was screwed to the implant. The denture was prepared for the direct pick up procedure, the same procedure repeated for CM IOC attachment. Four strain gauges around were installed on all surfaces of implant (Buccal. Lingual. Mesial .Distal) to monitor the effect of the applied loads vertical on the two types of attachments. A vertically load applied of 100 N static load was applied by using universal testing machine at three different sites (unilateral right first molar central fossa, left first molar and bilaterally.

Results : When the load applied on the right side and left side ,it was shown that the single implant retained ovcrdenture with ball the attachment has shown higher microstrain than the CMLOC ,average microstrain for CMLOC (222.23) N ,and for Ball (394.64) N for right side, for left side average, microstrain for Ball (391.26) N , and for CMLOC (223.22) N . When the load applied bilaterally, the single implant retained ovcrdenturc with the CMLOC (269.05)N attachment has shown higher microstrain than the Ball (106.79).

Conclosion: It can be concluded from this invitro study that the newly introduced attachment the CMLOC lends to show a better performance with regards to the micro-strains induced around the implants and also regarding improving the stability of the denture . On the other hand the ball attachments tends to show more micro-strain around the implants.

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Ahmed Hasanin Mohamed Rashad

Dedication

This thesis is dedicated to my beloved family, especially spirit of my father, my mother, my wife, my daughters my brothers and my sisters. I couldn’t have carried out this work without their love, affection and prayers.

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