

***SHORT LENGTH VERSUS CONVENTIONAL
IMPLANTS IN REHABILITATION OF
COMPLETELY EDENTULOUS MANDIBLE***

Thesis Submitted to the Faculty of Dentistry Ain-shams University for
Partial Fulfillment of Doctorate Degree Requirements in Oral and
Maxillofacial Prosthodontics

By

***AHMED MOHAMED ABDEL AZIEM
LASHEEN***

B.D.S. Oral and Dental Medicine
Faculty of Oral and Dental Medicine Cairo University
(2007)

M.D.S. Oral and Maxillofacial Prosthodontics
Faculty of Oral and Dental Medicine Cairo University
(2013)

Department of Oral and Maxillofacial Prosthodontics
Faculty of Dentistry Ain-Shams University
(2018)

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

وَعَلَّمَكَ مَا لَمْ تَكُنْ تَعْلَمُ
وَكَانَ فَضْلُ اللَّهِ عَلَيْكَ
عَظِيمًا

صدق الله العظيم

SUPERVISORS

PROF. ENGY AMEN TALLAT

Professor of Oral & Maxillofacial Prosthodontics
Faculty of Dentistry Ain-shams University

PROF. FARDOS NABIL FATHY RIZK

Professor of Oral & Maxillofacial Prosthodontics
Vice Dean for Research and Post-Graduate Affairs
Faculty of Dentistry-British University in Egypt

DR. MAHMOUD EL MOUTASSIM BELLAH SALAH-ELDIN EL HOMOSSANY

Lecturer of Oral & Maxillofacial Prosthodontics
Faculty of Dentistry Ain-shams University

DR. HEBA ALLAH TAREK MOHAMED MAHMOUD

Lecturer of Oral & Maxillofacial Prosthodontics
Faculty of Dentistry Ain-shams University

Acknowledgment

*First of all, my prayerful thanks to **Allah**, for everything I have and for the strength to complete this study.*

*It is a great honor to express my sincere gratitude to **Prof. Ingy Amin Tallaat**, Professor of Oral and Maxillofacial Prosthodontics, Faculty of Dentistry, Ain Shams University, for her valuable guidance, efforts, kindness and experience to make this thesis possible.*

*My profound appreciation to **Prof. Fardos Nabil Fathy Rizk**, Professor of Oral and Maxillofacial Prosthodontics and Head of Removable Prosthodontics Department, Faculty of Dentistry, British University, who has always been my inspiring teacher and under whose supervision I had the honor to finish this work.*

*My due thanks to **Dr. Mahmoud El Moutassim Bellah**, Lecturer of Oral & Maxillofacial Prosthodontics, Faculty of Dentistry Ain shams University, for his kindness, cooperation and continuous concern.*

*Special thanks and appreciation to **Dr. Heba Allah Tarek**, Lecturer of Oral and Maxillofacial Prosthodontics, Faculty of Dentistry, Ain Shams University, for her unlimited effort, supervision and generous assistance.*

*Special thanks to **Dr. Mohamed Shady Nabhan**, Lecturer of Oral and Maxillofacial Prosthodontics, Faculty of Dentistry, Ain Shams University, for his knowledge, and valuable assistance.*

*I would like to thank **Dr. Shaimaa Abo El Sadat**, Lecturer of Oral Radiology, Faculty of Dentistry, Ain shams University, for her exclusive knowledge, experience and endless guidance.*

Last but not least, I would like to thank my colleagues and all the staff members of Oral and Maxillofacial Prosthodontic Department, Faculty of Dentistry, Ain shams University for their great enthusiastic support to complete this work.

Dedication

To my Parents, who guided and supported me throughout my life.

To my Wife who gave me continuous encouragement and endless care.

To my adorable Sister and to my lovely Daughters.

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Introduction

Introduction

The traditional treatment plan for the edentulous patient is the complete removable maxillary and mandibular dentures. However, such prostheses, especially the mandibular denture, have well-documented problems such as lack of stability and retention. This is affected by the height and shape of the mandibular ridge as continued loss of alveolar bone can occur over time, and cause previously stable dentures to become ill-fitting.

Subsequent bone loss leads to a decrease in the size of the denture bearing area, thereby reducing denture stability which causes insufficient retention of the lower denture, difficulties with eating and speech and altered facial appearance.

Osseo-integrated dental implants with implant-supported or retained mandibular overdentures provided an alternative to the essentially palliative therapy offered by conventional dentures. The McGill Consensus Statement and the weight of supporting scientific literature have shown that implant supported and retained mandibular overdentures are superior to the conventional complete denture. ⁽¹⁾

For the edentulous mandible a two-implant overdenture treatment relative to conventional denture treatment provided enhanced prosthesis retention, stability, improved masticatory performance, oral health-related quality of life and patient satisfaction have been identified for patients having persistent functional problems with an existing mandibular conventional full denture due to atrophic mandibular arch.

In clinical situations where bone resorption has occurred following tooth loss, various strategies have been proposed to overcome the anatomic and physiologic limitations of implant placement.

Surgical protocols employing bone grafting, inferior alveolar nerve transposition, distraction osteogenesis and sinus augmentation have been suggested for standard implants rehabilitation treatments, while these methods have obtained a level of success, many patients are unable or unwilling to undergo such surgical procedures due to high cost, the need for multiple surgeries and poor general health. ⁽²⁾

With the introduction of short implants, dental implant rehabilitation for resorbed ridges is a less complex, less traumatic and more safe treatment option for edentulous patients showing bone height and volume limitations.

Biomechanically, short implants might be disadvantageous specially when combined with poor bone quality and high occlusal loads. However, the majority of the stress concentration is distributed at the level of the first few threads to the crestal cortical bone when an implant is loaded and that an implant with a larger diameter helps to reduce the maximum stress/strain values at the bone-implant interface. ⁽³⁾

The development of implant design, surface structure, and improved surgical technique has given reason to re-evaluate previous results in clinical situations with bone limitations. Several studies have demonstrated that short dental implants could be used successfully. However, the clinical effectiveness of short length implants versus conventional length implants was not thoroughly investigated. ⁽⁴⁾