بسم الله الرحمن الرحيم

Guided Bone Regeneration of Horizontal Alveolar Defects using Growth Factors Molecular Peptides to Facilitate Dental Implants Placement

Thesis

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By

Mahmoud Abdel Raouf Shalash

B.D.S, M.Sc. Cairo University

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Supervisors

Dr. Hatem Abdel-Rahman

Professor of Oral and Maxillofacial surgery

Faculty of Oral and Dental Medicine

Cairo University

Dr. Amr A. Azim

Professor of Oral Radiology

Faculty of Oral and Dental Medicine

Cairo University

Dr. Amany Neemat

Professor of oral Pathology

Head of Oral Surgery & Medicine Department

National Research Center

Dr. Hesham Elhawary

Lecturer of Oral and Maxillofacial surgery

Faculty of Oral and Dental Medicine

Cairo University

DEDICATION

To my mum who is always encouraging and pushing me forward towards success

To my father with his endless love and sacrifices

To my beloved wife who supported me every step of the way and to my two daughters

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INTRODUCTION

Introduction

Alveolar bone loss can occur after tooth extraction and/or trauma. Adverse alveolar bone conditions can also result from advanced periodontal disease as well as failed endodontic therapy **(Esposito el al. 2006).**

If the alveolar ridge is not preserved at the time of tooth extraction or tooth loss, alveolar ridge height and width-as well as position-may be lost, particularly in the area of the facial plate**.** Major changes have been demonstrated to occur during the first year after tooth extraction, and losses between 3 & 6mm horizontally and 2 mm vertically have been reported **(Nevins et al. 2006).**

Dental implants have become a milestone in dentistry, and numerous oral therapies that could not be possible with conventional techniques have become possible. An essential condition for successful implant therapy is the presence of an adequate quantity and quality of bone. A significant problem, however, is insufficient height and width of the alveolar bone at the implantation site **(Beer et al. 2003).** Several methods have been developed to restore such deficient existing bone volume. These methods include guided bone regeneration with barrier membranes (GBR), onlay bone grafting, ridge splitting and distraction osteogensis with or without growth and differentiation factors **(Buser et al. 2004).**

Although the use of autogenous bone has been widely accepted as the gold standard augmentation material; intra- and extra-oral donor site morbidity, potential complications and risks associated with the harvesting procedures have been reported. To overcome such drawbacks bone substitution materials of allogenic, alloplastic, or xenogenic origin have been introduced as alternatives to autogenous bone grafts **(Streitzel et al. 2007).**

The selection of the appropriate augmentation technique or grafting material influences the success and final treatment outcome. Defect size and the patient's general health condition are some of the factors that influence the decision making in bone grafting procedures **(El Askary 2003).**