Evaluation of the need of graft material in delayed immediate implant

Thesis

Submitted to the Faculty of Oral and Dental Medicine
Cairo University
In Partial Fulfillment of Requirements for
Master Degree (M.Sc.) in
Oral and Maxillofacial Surgery

By

Amr Nabil Mohamed Barakat
B.D.S 2000
Faculty of Oral and Dental Medicine
Cairo University

2009

Supervisors

Prof. Dr. Khaled Mohamed Tawfik
Professor of Oral and Maxillofacial surgery,
Faculty of Oral and Dental Medicine,
Cairo University

Dr. Nader Nabil El Bokl
Lecturer of Oral and Maxillofacial surgery,
Faculty of Oral and Dental Medicine,
Cairo University

Dedication

To my parents for their endless love and Sacrifices

To my family

To my precious Pearl "my son"

Acknowledgement

First and foremost thanks are due to **Allah the beneficent and merciful**

I would like to express my deep gratitude and honor to **Prof. Dr. Khaled Tawfek**, Professor of Oral and Maxillofacial surgery, Faculty of Oral and Dental Medidine, Cairo University for his support and supervision during the entire course of the work. His valuable suggestion and guidance are highly appreciated.

I can not find sufficient words to express my gratitude to **Dr. Nader El Bokl,** lecturer of Oral and Maxillofacial surgery, Faculty of Oral and Dental Medidine, Cairo University, for his valuable guidance and suggestion, constructive criticism and powerful support. I am very grateful and thankful for all the effort and time he exerted to make the research study possible.

Deepest appreciation and thanks are dedicated to **Prof. Dr. Mohamed El Sherbini,** Professor of Oral and Maxillofacial radiology, Faculty of Oral and Dental Medidine, Cairo University for his willing, great help and generous valuable orientation.

Contents

List of tables

List of figures

تقييم الحاجة إلى مادة طعام في حالة الغرسة الفورية المؤجلة

رسالة

مقدمه إلى كلية طب الفم والأسنان

جامعة القاهرة

كجزء متمم للحصول على درجة الماجستير

في جراحة القم والأسنان

مقدمه لكم

عمرو نبيل محمد بركات

بكالوريوس ٢٠٠٠

جامعة القاهرة

٢٠٠٩

المشرفون

أ.د/ خالد محمد توفيق

أستاذ بقسم في جراحة الفم والأسنان

كلية طب الفم والأسنان

جامعة القاهرة

د/ نادر نبيل البكل

مدرس بقسم في جراحة الفم والأسنان

كلية طب الفم والأسنان

جامعة القاهرة

الملخص العربي

أشتملت الدراسة الحالية على غثني عشر غرسة سنية تم وضعها في ستة مرضي أصحاء، خمس مرضي من الأناث واحد من الذكور. تراوحت أعمال المرضي من ٢٤-٤٩عام.

كان الهدف من البحث هو تقييم الاحتياج إلى مادة الطعم (Plaster of Paris) في حالة الغرسة الفورية المؤجلة وذلك عن طريق الفحص الأكلينيكي وباستخدام أشعة إكس.

أشتملت الدراسة على الفريقين (أ،ب) تم وضع الغرسات بهم بعد ٤-٦ أسابيع من خلع الأسنان العلوية الأمامية الضاحكة. تم وضع ٦ غرسات في الفريق (أ) مع استخدام مادة الطعم، بينما في الفريق (ب) تم وضع ٦ غرسات بدون إستخدام ادة الطعم. تم عمل فحص دوري إكلينيكي بإستخدام أشعة إكس بعد وضع الزرعة مباشرة، وبعد شهر وبعد أربعة أشهر من وضع الزرعة مباشرة، وبعد شهر وبعد أربعة أشهر من وضع الزرعة.

أوضحت نتائج الفحص الأكلينكي خلوها من علامات الألتهاب أو العدوي في مكان الجراحة لكلا الفريقين، بينما وجد شق بسيط باللثة في حالة واحدة من الفريق ب.

أثبتت نتائج الفحص بإستخدام أشعة إكس ارتفاع ملحوظ في كثافة العظم حول الزرعات في كلا الفريقين. وبالرغم من وجود ارتفاع طفيف في الكثافة العظمية في الفريق (أ) عن الفريق (ب)، ظل هذا الارتفاع غير مؤثر إحصائيا.

Introduction

Loss of natural teeth will dramatically affect esthetics, masticatory function and may also lead to psychological and emotional troubles. Replacement of missing teeth by dental implants has a high documented success rate over 15 years follow-up period of osseointegrated implants **(*Adell et al. 1981).***

The American academy of implantology (1991) defined the oral implantology as "it is the art and science required to insert and maintain biocompatible materials and devices either on or within the jaw bones followed by fabrication of fixed or removable prosthesis to restore function, comfort and esthetics to the partially or totally edentulous patient".

Success of dental implants is based on the principle of osseointegration. Osseointegration phenomenon was first described by a sweedish bioengineer Per-Ingvar Brånamark. ***Brånemark et al. (1969)*** have described histologically the direct bone-to-implant connection on experimental animals**.** Further studies were also done by ***Schroder et al. (1976)*** to clearly demonstrate this intimate connection between implant and bone histologically. Since this year, many other studies have been proposed in order to improve the performance and esthetics of dental implants.

Review of Literature

Osseointegration is a histological term denoting direct bone to implant connection ***(Brånemark et al. 1969)***. Osseointegration has also been defined based on the clinical stability as" it's a process whereby clinically asymptomatic rigid fixation of alloplastic materials is achieved and maintained in bone during functional loading'' ***(Zarb and Albrektsson 1991).***

Albrektsson et al. (1981) have illustrated the factors affecting the success of osseointegration, these factors are bio-compatibility of implant material, design of an implant, surface conditions, status of host bed, technique of insertion and finally the loading conditions.

In 1988, Albrektsson was the first to discuss criteria for sucess of osseointegrated endossous dental implants. He noted that successful implant should be clinically immobile, no signs and symptoms of infection, paraesthesia or violation of the canal, no peri-implant radiolucency and finally marginal bone loss around the implant should not exceed 0.2mm annually after an implant 1st year of service.

In 1989, Smith and Zarb added two additional criteria for implant success. These criteria include proper implant positioning in order to provide satisfactory esthetic results for supra-structures and the success rate should not be less than 85% at the end of 5 years and 80% at the end of 10 years.

Classification of dental implants:

There are different classifications that have been proposed for endosteal dental implants in the literatures according to the following aspects:

1. Implant material.
2. Implant design.
3. Surface topography.
4. Surgical stages.
5. Manner of insertion.
6. Technique of loading.
7. Time of insertion.

1. According to implant material:

Implant materials are classified according to host tissue reaction into biotolerent, bioinert or bioactive materials ***(Osborn and Newesely 1980)***

- Biotolerant materials are surrounded by fibrous capsule leading to fibrointegration as gold or cobalt-chromium alloys.
- Bioinert materials that allow direct bone to implant contact leading to osseointegration e.g. pure titanium.
- Bioactive materials: these materials allow the formation of chemical bond along the interface e.g. Hydroxyappatite**.**

Implant materials can also be classified into metals, ceramics and polymers ***(Sykaras et al. 2000).*** Various metals and alloys have been used in dental implant manufacturing. Many of metals and alloys e.g. gold, stainless steel and cobalt-chromium are now obsolete in the oral implant