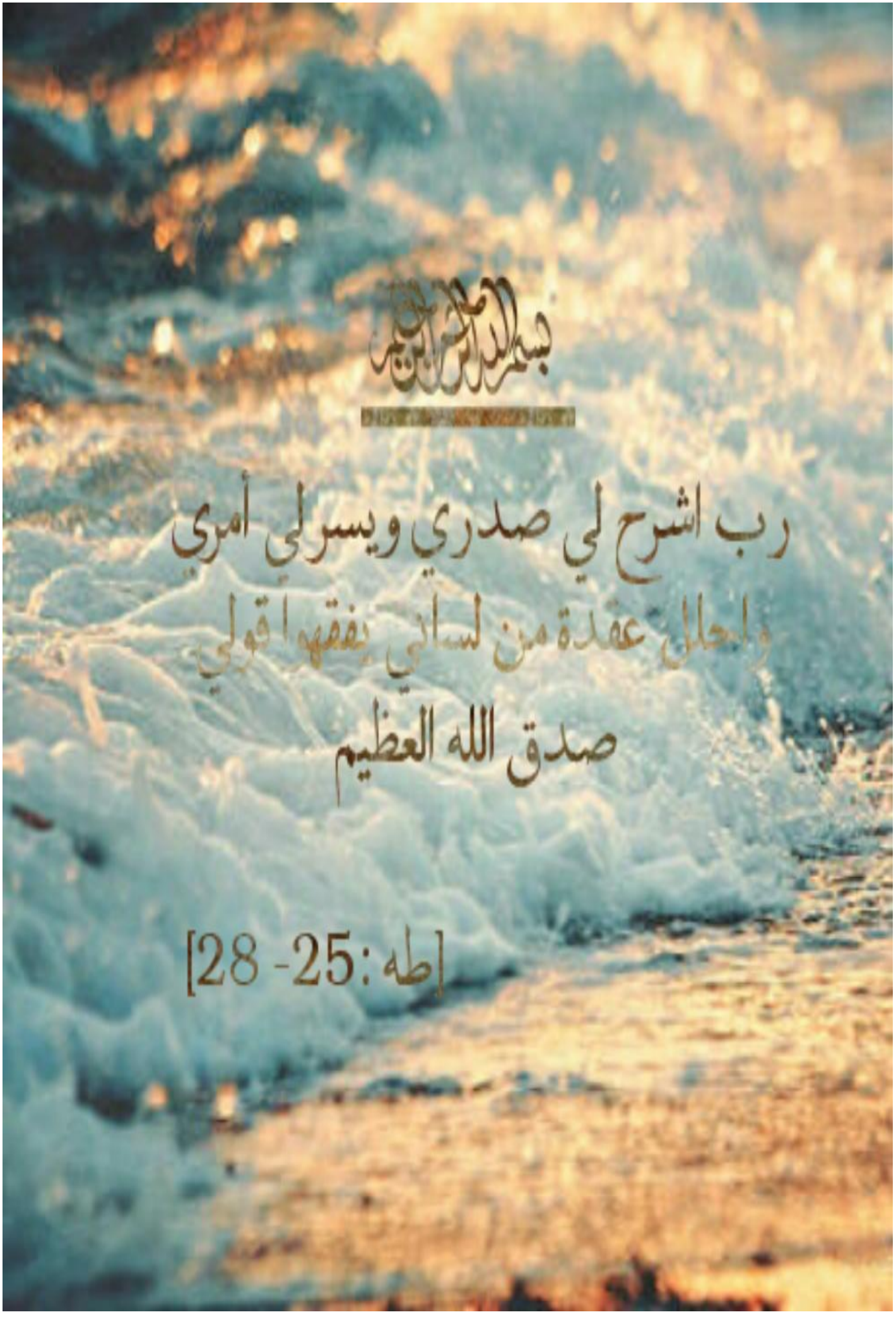
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Comparative study between the effects of two different bar designs on the supporting structure of implant supported overdenture

A thesis submitted to

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Dedication

*To my wonderful **parents**, who were always there with their love endless support and sacrifice throughout my life. Thank you both for giving me strength that kept me going and without your encouragement after **ALLAH**, this work would have not been possible*

Acknowledgment

First of all, I would like to thank **ALLAH** for blessing me with an elaborative network of teachers, mentors, colleagues, family and friends.

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INTRODUCTION

Edentulism is considered a poor health outcome and may comprmise quality of life. The prosthetic management of the edentulous patient has long been a major challenge for dentistry.

The classical treatment plan for the edentulous patient is the conventional complete removable maxillary and mandibular denture. However, this treatment has several drawbacks specially that of the lower denture.

Treatment of edentulous patients with implant-retained removable prostheses has been shown to provide a perdicatable and successful outcome that overcomes the functional deficiencies that are associated with conventional dentures.

Recently the most basic restoration for the edentulous mandible should be an implant retained overdenture with two implant placed in the anterior mandible. In completely edentulous patients, implants can be used in conjunction with attachments to enhance the retention and stability of the overdentures.

Different types of attachments systems had been suggested for retaining implant supported overdentures including stud, bar, telesopicc and magnetic attachments. All these types of anchorage systems had different retentive capacities and have it`s effect on supporting structures of implant, Thus, the present study is designed to compare the effect of two different bar design on implant supporting structure.

REVIEW OF LITERATURE

Problems of the Conventional Complete Denture

The factors that adversely affect successful use of a complete denture on the mandible include: mobility of the floor of the mouth، thin mucosa lining the alveolar ridge, reduced support area and the movement of the mandible **(Chee and Jivraj 2006).**

Removable complete dentures have been considered as a traditional and common way to restore edentulous patients.

Edentulous patient with severely resorbed mandible often experience problems with their conventional complete denture, especially with regard to mandibular denture. These problem include: difficulty with prosthesis retention, stability and comfort .this in turn may negatively affect functional ability such as speech, aesthetic and mastication **(Hutton et al. 1995, Block et al. 1998).**

Furthermore, when complete dentures lack sufficient retentionthey continuously drag over mucosal tissue .This may lead to tissueirritation and its corresponding to changes as hyperplasia and/or inflammation **(Van der Wal and Van der Kuij I, 1994).**

The increased mobility of conventional complete dentures not only affects the masticatory function, but also adversely affects the patient's confidence and social life **(Yoshida et al. 2001).**

The problems of conventional complete dentures can be summarized as continued alveolar bone loss leading to lack of stability and retention

especially of the lower denture which in turn causes lack of self-confidence and reduction in biting force and chewing efficiency, so most difficulty with complete denture prostheses arises from the inability to function with the mandibular prostheses.**(Doundoulakis et al. 2003).**

Dental implants

Dental implant can be defined as prosthodontics device made of alloplastic material implanted into the oral tissue beneath the mucosal and/or the periosteal layers and/or within the bone to provide retention for fixed or removable prosthesis **(Academy of prosthodontics, 2005).**

Classification of dental implants

Branemark et al. (1977) and Worthington (1988) have classified the dental implant according to anatomical relation to bone into:

- **Endodontic stabilizer**

Craninet al. (1999) stated that it is smooth or threaded metal pin implant that extends through the root canal into the periapical bone to stabilize the mobile tooth.

- **Mucosal inserts**

Weiss and Judy (1975) defined it as collar-button shaped titanium projection attached to the fitting surface of the prosthesis. These projections mechanieally engage into surgically prepared soft tissue folds in the mucosa.

- **Subperiosteal implant**

It has been defined by (Academy of prosthodontics,2005) as cast metal framework that fits on the residual ridge beneath the periosteum and provides support for a dental prosthesis by means of posts or other mechanisms protruding through the mucosa.

- **Distraction implant**

It was introduced according to the **(Academy of prosthodontics, 2005)** classification of dental implant, who noted that the alveolar ridge distraction has been introduced for augmentation of the atrophied mandible or maxilla by the use of distraction implants, made of titanium and contain two mobile endosteal parts. It combines the qualities of screw implant with those of a callus distraction device, which heightens the alveolar ridge.

- **Endosteal dental implant**

It is placed into the alveolar and/or basal bone of mandible or maxillaandtransecting only one cortical plate.

According to the **Academy of prosthodontics, 2005** it is composed of ananchorage component, implant body placed in the bone, a retentive component,implant abutment connected to the implant body passing through the oral mucosato retain and support the prosthesis.

Classification of endosseous dental implant

- **Transostealdental implants**

According to **Academy of prosthodontics (2005)** they are composed of a metalplate with retentive pins to attach it to inferior border of the mandible, that support transosteal threaded posts that penetrate the full thickness of mandible tothe oral cavity in parasymphyseal region.

- **Ramus blade and ramus frame implants**

(Richard, 1992) described it as attached in part to the mandibular ramus. Ramus bladeimplant is one piece system made of chromium-nickel based

alloy. The ramus frame is a triple-blade one piece device designed for relatively atrophied mandibles.

- **Blade form implant**

Craninet al. (1999) described it as it composed of abutment head, neck, body ventsand a recess in the shoulder. It is wedge shaped, buccolingually narrowed dental implant bodies with the widest dimension at the shoulder and narrowest dimension at apical end, with vents through which tissue may grow. They are mainly indicated in knife edge ridges, especially for posterior free end saddle areas of mandible.

- **Root-form implants.**

It is endosteal implant shaped In the approximate form of a tooth root This implant requires a vertical column of bone (more than l3mm vertical height and more than 6mm buccolingual). They are preferred over other types due to better stress distribution, abutment designs, and faster healing, good esthetics, and less skill requirements **(Cranin and Klein, 1993).**

Classification of root form implants

a- According to design

Root form implants are either cylinder or screw in form. Cylinders may be tapered, may have external threads or hollowed with fenestrations called baskets; solid may have external fins rather than threads **(Misch, 2005).**