Effect of Retention Sil Versus Ball and Socket Attachment on the Supporting Structures of Implant retained Mandibular Overdentures

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BY

Ahmed Abd Al-Kader Ali Saif

BDS Ain Shams University (2009)

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Under supervision of

Dr. Marwa Ezzat Sabet

Professor of Removable Prosthodontics

Head of Prosthodontics Department

Faculty of Dentistry

Ain shams University

Dr. Noha Helmy Hassan Nawar

Lecturer of Removable Prosthodontics

Faculty of Dentistry

Ain Shams University

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Abstract

Introduction: Introduction of dental implant retained overdentures in the field of dentistry improves retention and stability of dentures and improve function when compared to conventional dentures, therefore implant retained overdenture is considered the first treatment option for mandibular edentulous patients which mainly complain from instability of their mandibular dentures.

Aims: This study radiographically assesses the effect of retention sil versus ball and socket attachment on the supporting structures of mandibular implant retained overdentures.

Materials and Methods: Fourteen completely edentulous patients were selected from the outpatient clinic Faculty of Dentistry, Ain Shams University according to the following criteria:

Results: All the selected patients were rehabilitated by mucosa supported maxillary complete denture and implant retained mandibular overdenture. Patients participating in this study were randomly divided into two equal groups according to the type of attachment:

Group I: Patients were received lower implant retained overdenture relined with " Retention Sil " soft liner.

Group II: Patients were received lower implant retained overdenture with ball and socket attachment.

Conclusion: Patient rehabilitation with implant retained overdenture using retention sil had a better effect on bone resorption compared to the effect of ball and socket.

Recommendation: Based on the results of this study, it was recommended to carry out the same study but regarding to the difference in the retentive value between “Retention Sil” material and ball and socket attachment.

Keywords: Radiographically, Sil Versus Ball,Socket Attachment, Mandibular Overdentures

List of contents

List of contents

List of contents

List of figures

List of tables

Introduction

Introduction of dental implant retained overdentures in the field of dentistry improves retention and stability of dentures and improve function when compared to conventional dentures, therefore implant retained overdenture is considered the first treatment option for mandibular edentulous patients which mainly complain from instability of their mandibular dentures.

Minimal bone presence is a challenge for the implant placement therefore medi-implants (ranging from 2.9 to 3.5 mm diameter) have been introduced to be the conservative solution for rehabilitation of mandibles with inadequate bone thickness.

Medi-implants (one piece implant) are immediately loaded implants which provide less invasive surgical procedure for the patients.

Placement of only two implant retained overdenture is a cost effective because it supplies patient with function, retention and stability with minimal economic needs.

Application of soft resilient liner in implant retained overdentures improves resistance to bone resorption by its

cushion effect and it provides the satisfying retention function when it is used as an overdenture attachment.

Application of ball and socket attachment provides adequate retention and stability for the mandibular overdentures with the least cost required.

"Retention Sil" is a recent material introduced to dental technology, that combine the cushioning effect of the soft liner beside the retention force of the female portion of the attachments. Thus this study was proposed to pin point and put focus on the effect of the "Retention Sil" material on the implant supporting structures.

Review of Literature

Removable complete dentures have been considered as a traditional and common way to restore edentulous patients. However, the progressive bone resorption of the edentulous alveolar ridge is the main concern when rehabilitation of the edentulous mandible using the removable complete denture is considered. [1]

Functional problems associated with edentulism such as unstable dentures and inadequate chewing efficiency, had been reported by many authors. [2,3]

The consequences of edentulism include inhibition of mastication, deficiency in phonetics and reduction of social contact.[4] Many edentulous patients have problems from their complete denture especially their lower one. [5] The problems usually include decreased retention and stability of the denture and pain during mastication. With time, as the resorption of the residual ridge was increased, pain and inadequate oral functioning may even increase to an extent that proper food mastication and the patient's confidence are jeopardized.[6]

Usually patient satisfaction is affected with improved esthetics, retention and function. The maximum amount of patient satisfaction, when fabricating complete dentures, should be the most concern in the treatment of edentulous patients. Therefore retention, stability and support are the keys for success of complete dentures. [7-9]

Denture retention:

Denture retention has been defined as "resistance of a denture to vertical movement away from the tissues and as ‘that quality inherent in the prosthesis acting to resist the forces of dislodgement along the path of insertion".[10,11] Denture retention is understood to be affected by saliva surface tension, its viscosity, the thickness of the salivary film, the contact surface and the saliva denture contact angle. Therefore, adequate denture retention and better stability can be achieved by good adaptation of the denture to the tissues as mentioned by Kikuchi et al. [12]

Other factors also affect retention and stability of complete dentures such as neuromuscular coordination, abnormal jaw and ridge relationships and inadequate quality and quantity of available bone. [13]

There are alternative treatments that aid in increasing retention and stability. These include resilient soft liner materials or surgical intervention such as bone augmentation , distraction of the alveolar ridge [14,15], increase the vestibular depth by vestibuloplasty, lowering the floor of the mouth [16] and dental implant to provide an anchorage for implant supported/retainedprostheses.[17] The liner materials were applied to the fitting surface of dentures to decrease localized pressure on the tissues, enhance force distribution, and improve denture retention by engaging undercuts. [18]