



شبكة المعلومات الجامعية
التوثيق الإلكتروني والميكرو فيلم

بسم الله الرحمن الرحيم



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شبكة المعلومات الجامعية التوثيق الإلكتروني والميكروفيلم



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جامعة عين شمس

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**Stress Induced by Mandibular Screw Retained Hybrid
Denture on “All-On-Four” Implant Distribution:
Comparison between Three Different Hybrid Denture
Materials: In-Vitro Study**

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Fulfillment of the Requirement for the Master’s Degree in Oral and Maxillofacial
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وَقَالَ
رَبِّ زِدْنِي عِلْمًا

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INTRODUCTION



Introduction

The re-establishment of the completely edentulous patient is a major responsibility for the prosthodontist. However, conventional complete dentures offer reliable service, the anatomic restrictions, tissue changes below the denture and the psychological make-up of the patient contribute to the poor performance of the Prosthesis.

Implant assisted over dentures and hybrid prosthesis provides good support and retention when compared to the traditional fixed prosthesis.

The All-on-Four treatment protocol, involves the re-establishment of edentulous arches with four implants, including two anterior vertically and two posterior tilted implants (interforaminal region), which are immediately loaded by a fixed provisional denture.

Hybrid prosthesis is the suggested treatment option for patients suffering from severe alveolar ridge resorption so implant assisted over dentures are now considered as a standard treatment for highly resorbed alveolar ridge patients.

Various material combinations including metal/acrylic, metal/ceramic, BioHPP and zirconia/ceramic have been used for constructing this type of restoration.

The denture base resin is commonly based on poly methyl methacrylate (PMMA), which has several advantages such as brilliant esthetics, stability in the oral environment, and simplicity of repair. However, flexural fatigue has been considered as a influencing factor for fracture.

Cobalt chromium (co-cr) alloy was used for construction of overdenture framework due to its low cost and favorable mechanical properties such as well as

high corrosion resistance. However, loss of acrylic teeth and lack of natural color are the major drawbacks.

BioHPP (High Performance Polymer) is based on polyether-ether-ketone (PEEK) is an innovative material for creating CAD-CAM fixed and removable prostheses, because it has elastic modulus that is close to human bone suggesting homogenous stress distribution to surrounding tissues and it is also easy to mill and to polish. Milling with poly ether ether ketone (PEEK) is highly suggested as the resulting non-allergic prostheses are lighter in color than those constructed of other materials, such as Co-Cr or titanium.

CAD-CAM (Computer-Aided-Designed , Computer-Aided Manufactured) is a design, fabrication and manufacturing process used for restorative and prosthodontic treatment procedures, using biocompatible materials including alloys, ceramics and high-performance polymers. CAD-CAM also decreases chairside time and also produces good outcomes.⁽¹⁾

So this study was conducted to compare stress induced by screw retained hybrid denture made from acrylic with metallic substructure versus BioHPP versus all acrylic denture base material on all on four implant distribution.