شبكة المعلومات الجامعية

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بسم الله الرحمن الرحيم

HANAA ALY

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جامعة عين شمس

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HANAA ALY

Effect of Osseodensification Implant Site Preparation Technique on the Primary Stability of Implant Retained Maxillary Overdentures

A thesis submitted to Prosthodontics Department Faculty of Dentistry Ain Shams University for partial fulfillment of the requirements for master's degree in Oral and Maxillofacial Prosthodontics

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Introduction

Tooth loss has negative effects on essential oral function, as well as the social aspects of dental health. Oral disease and edentulism are common problems, making treatment and its consequences for quality of life a chief concern when assessing patient's overall health status.

In the last 30 years, dental implant-based treatments have become a valuable treatment option for completely edentulous patients as an alternative to conventional dentures. The therapeutic options are various, including from rehabilitation involving numbers of implants, to a more minimal option represented by implant overdentures. Implant rehabilitation of the edentulous maxilla remains one of the most complex restorative challenges because of the number of variables that affect both the aesthetic and functional aspect of the prosthesis.

Biomechanical capabilities of implants are affected by various factors, which include implant macro/microgeometry, nano-surface modifications, and osteotomy techniques. Conventional extractional technique employed a standard drill to excavate bone and facilitate implant placement. They produce effective cutting of bone but lack the design capability to create a precise circumferential osteotomy, which leads to a reduction of torque during implant insertion, poor primary stability and contributing to the potential for non-integration of the implant.

Osseodensification is a novel bio-mechanical site preparation technique. It produces low plastic deformation due to its non-extraction site preparation method, which preserves the bone to enhance the host. It utilizes a multi-fluted Densifying Bur technology (Densah bur) that creates and expands a pilot hole without excavating significant amounts of

bone tissue through a unique, highly controllable, fast, and efficient procedure with minimal heat elevation. The taper design allows the surgeon to modulate pressure and irrigation, while providing unique real-time haptic feedback that makes the Densifying Bur intuitive for every skilled implant surgeon.

Osseointegration is a prerequisite for successful implant treatment. Primary implant stability has been acknowledged as an essential criterion for later achievement of such osseointegration. Implant stability can be defined as the absence of clinical mobility under a specific load, which depends on the contact between implant surface and the bone surrounding the implant. Recently a non-invasive method called resonance frequency analysis (RFA) has been introduced for the assessment of the implant stability and Osstell is resonance frequency device published by **Meredith**. RFA has been reported to be a reliable, reproducible, and objective method to measure the stiffness of bone-implant-complex.

So, this study was conducted to evaluate the effect of osseodensification drilling technique on the primary stability of implant retained maxillary overdenture.