



***The Initial Stability of Dental Implant
with Horizontal Plate
(An In Vitro Study)***

*A thesis submitted to the council of the College of
Dentistry at the University of Baghdad, in partial
fulfillment of the requirements for the degree of Master
of Science in Prosthodontics Department*

***By
Yaseen Hasan Motea
B.D.S.***

***Supervised by
Assist. Prof. Dr. Basima M. A. Hussein
B.D.S., M.Sc., Ph.D.***

Baghdad-Iraq

May-2013

Jumada Al-Akhir-1434

Abstract

The Initial (primary) stability is one of the factors that play an important role in the success of the dental implants.

The purpose of this study was to evaluate the initial stability of dental implant with horizontal plate by using five analytical tests: insertion torque, removal torque, resonance frequency analysis, push-in test and pull-out test.

Two different lengths of dental implants (5mm and 10mm) were tested in this study; each dental implant was 4mm in diameter with a square threads shape of 1mm pitch and 0.5mm depth. The crestal area was 4.2mm diameter contain a right angle margin circumferential ring while the apical area was taper with two self-tapping grooves. In this study, the initial stability of dental implants' design was compared with initial stability of dental implants of the same dimensions and design that engage horizontal plates of 1.5mm thickness at the apical end.

All dental implants were implanted into a solid rigid polyurethane foam blocks (artificial bone) of 0.48g/cm^3 density and tested by the five initial stability tests. Each test was done with forty samples (twenty samples of 5mm length and twenty samples of 10mm length).

The statistical analysis was performed and the result showed that there was very highly significant difference between dental implants with the horizontal plates and dental implants without the horizontal plates of both 5mm and 10 mm lengths in four initial stability tests which were insertion torque, removal torque, push-in test and pull-out test.

The statistical analysis of the resonance frequency analysis showed that there was non-significant difference between dental implants with the horizontal plates and dental implants without the horizontal plates of both lengths.

These results implied that the dental implants with the horizontal plates had better primary stability compared with the dental implants without the horizontal plates confirming that the horizontal plates enhanced the primary stability of the dental implants.