

The Effect of using different locator attachments with a different retention value on the bone height changes in Implant Supported class I removable Mandibular partial Overdenture, A Radiographic Evaluation.

Amr Salah el-din⁽¹⁾ ; Ahmed Mohamed Osama⁽²⁾.

1. Lecturer of Removable Prosthodontics, fayoum University.
2. Associate professor of Removable Prosthodontics, Faculty of Dentistry- Ain shams University.

Abstract

Purpose: The aim of this study was to evaluate the effect of using different locator attachments with a different retention value and ball and socket attachment on the bone height changes in Implant Supported class I removable Mandibular partial Overdenture.

Introduction:

The use of osseointegrate dental implants is one of the most successful treatment options to solve the problem of distal extension cases. A critical factor affecting the success of an implant is the manner in which mechanical stresses are transferred from the implant to the bone. One of the factors which affect the amount of force transmitted to the implant is the choice of the attachment.

The Locator attachment system is a self-aligning and has dual retention, supplied in different colors; with a different retention value (white, orange and blue). The white housing has light retention, the orange housing has standard retention, and the blue has high retention while the ball and socket attachments consist of a titanium male unit and an easily replaceable rubber ring female unit that is retained in a metal retainer ring.

The question is which of the various Locator attachment system used to retain mandibular partial overdenture affect the magnitude of stresses transmitted to the implants thus affecting the bone height changes around the implants.

Material and methods:

Twelve class I mandibular partially edentulous patients with opposing full dentate maxillary arch were selected from the from the Outpatient clinic, Prosthodontic Department, Faculty of Dentistry, Ain shams University. For all the patients extra and intraoral examinations were done associated with the proper

laboratory investigations. Acrylic temporary partial denture was made for all the patients, the partial denture was duplicated into clear acrylic resin model then the model was scanned using CBCT machine and the DICOM data was processed to obtain STL file for the model. The digital image was performed and the virtual implant was placed in the most optimal position at the first molar area according to the surgical and prosthetic design.

Conventional implant fixture were surgically inserted so that the top level of fixture needs to be located 0.5mm below the marginal crestal bone level, After three month from implant insertion, each patient was recalled For the insertion of super structure. The selected cases were randomly divided into three equal groups; **Group I** received an implant Supported class I removable Mandibular partial Overdenture with white locator attachment **Group II** received a Implant Supported class I removable Mandibular partial Overdenture with an orange locator attachment and **Group III** received an implant Supported class I removable Mandibular partial Overdenture with a ball and socket attachment.

CBCT was used to evaluate the bone height changes around each implant at time of partial over denture insertion, 3months and 12months from partial over denture insertion.

Results:

The results show that in all groups the bone loss appeared to be within acceptable limits in the groups during follow up period(less than1 mm during first year) but with significant differences in the bone height changes around the implant between both locator attachments and ball and socket attachment while the results show no significant difference between white and orange locator but the orange locator show higher bone resorption than the white locator.

Conclusion:

The current study concluded that locator attachments with different retention value provides better preservation of crestal bone than ball and socket stud attachment , where the white locator attachment show transmits less stress to the abutment resulting in reducing the amount of bone loss around the implants than orange locator when used in implant supported class I mandibular partial over denture

Keywords: Implant Overdenture, ball and socket attachments, locator attachments, white locator, orange locator, CBCT, Crestal bone resorption