

Influence of Attachment Type on Stress Distribution in Mandibular Implant-Retained over Dentures

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Objective: To evaluate the stresses transmitted to the supporting structures of implant retained mandibular over-denture with different types of attachment.

Materials & methods: An acrylic model resembling the edentulous mandibular arch was manufactured with simulated mucosa covering the residual ridge. Two implants were installed in the canine region one on each side. Complete lower overdenture was constructed on the model. Three different types of attachments were used successively; ball and socket, magnet and bar clip system.

Eight strain gauges were attached to the lingual and labial/buccal aspects of the two implants and first molar area on the right and left side of the model.

Microstrain readings were collected from the digital strain meter and statistically analyzed.

Results: When the load was applied anteriorly: there was significant difference between the three types of attachments regarding stress distributions (a) on the implants with the highest stresses produced by the bar/clip attachment, (b) on the first molars with the highest stresses produced by the magnet attachment. When the load was applied posteriorly: there was significant difference between the three types of attachments regarding stress distributions (a) on the implants (loaded and none loaded) with the highest stresses produced by the bar/clip attachment, (b) on the first molars (loaded and non-loaded) with the highest stresses produced by the magnet attachment.

Key Words: Dental implant, Attachment, Stress distribution

Biography:

Ahmed Ibrahim Mahrous completed his BDS, Msc, PhD. He currently working as Assistant Professor of Prosthodontics & Implantology at Al-Farabi Medical College, School of Dentistry, KSA/ October 6th University faculty of dentistry, Egypt Since 2012 till now. Prosthodontics researcher and specialist related to dental Implantology field since 2004 and have many publications in the scoop and field of implant prosthetics specially those related to implant retained over dentures and the wide use of different implant attachments in complete and partial edentulous cases.