

Comparison of the stability and marginal bone loss around implants with screwless Morse taper and screw-retained implant-abutment connections

O. Geckili,¹ E. Geckili,¹ H. Bilhan,² O. Kutay,¹ T. Bilgin¹

¹Istanbul University, Istanbul, Turkey, ²Okan University, Istanbul, Turkey

Background: Screwless Morse taper connection has been introduced in dental implantology to reduce the complications in implant abutment connections by providing mechanical stability. However these advantages has not been proved by a clinical control study.

Aim/Hypothesis: The aim of this study was to compare the primary and secondary stabilities and the marginal bone loss around the implants with internal hexagonal connections and screwless Morse taper connections.

Material and methods: Twenty edentulous subjects who attended to a University clinic to receive mandibular overdentures retained by two implants during a period of 1 year were included. Impressions were made, maxillomandibular relationships were determined and the artificial teeth were set. After try in, the mandibular tooth arrangement together with the base plate was duplicated using a clear autopolymerizing resin for each patient in order to use as a surgical template. 2 holes were prepared on the canine regions of the prepared surgical template and stainless steel guides matching the pilot drills of the implant manufacturers were positioned on the holes using a surveyor and stabilized using a cold curing resin. Each patient received one implant with a screwless Morse taper connection in the left canine area of the mandible (Octo, Tasarimmed, Istanbul, Turkey) and one implant with a screw-retained implant-abutment connection in the right canine area of the mandible (Biohorizons, Birmingham, AL). All implants were 4.0 mm wide and 12 mm long. Five weeks after surgery, mandibular impressions were made using open tray impression copings and bar retained mandibular overdentures were fabricated and delivered to the patients. Insertion torque was measured during surgery and periotest was measured during surgery, just before implant loading and 6 and 12 months after surgery. Panoramic radiographs were taken from the patients, right after surgery, before implant loading, 6 and 12 months after surgery to measure the marginal bone loss of the implants.

Results: No significant differences were detected between the insertion torque values of Octo and Biohorizons implants ($P > 0.05$). Additionally, no significance was detected between the Periotest values of the implants ($P > 0.05$) but the Periotest values of Octo implants were significantly higher than Biohorizons implants at the time of loading and at the 6th month ($P < 0.05$) interval. No significant differences were detected between the marginal bone loss of implants for all of the measurements ($P > 0.05$).

Conclusions and clinical implications: It may be concluded that the primary stability and marginal bone loss of implants with internal hexagonal connections and screwless Morse taper connections do not differ; while the implants with internal hexagonal connections are more stable than implants with screwless Morse taper connections at the time of loading and 6 months after surgery.