عنوان مقاله:

The accuracy of various torque wrenches used in dental implant systems

محل انتشار:

مجله مواد و تکنیک های دندانپزشکی, دوره 2, شماره 2 (سال: 1392)

تعداد صفحات اصل مقاله: 7

نویسندگان:

Hamidreza Rajatihaghi - *Dental Research Center, Assistant Professor of Prosthodontics Department, Faculty of Dentistry, Mashhad University of Medical Sciences*

Jalil Ghanbarzadeh - *Dental Research Center, Associate Professor of Prosthodontics Department, Faculty of Dentistry, Mashhad University of Medical Sciences*

Neda Daneshsani - *Faculty of Dentistry, Mashhad University of Medical Sciences, Mashhad, Iran*

Rasul Sahebalam - *Dental Research Center, Assistant Professor of Pediatrics Department, Faculty of Dentistry, Mashhad University of Medical Sciences*

خلاصه مقاله:

Introduction: The purpose of this study was to compare the accuracy of the torque wrenches used in different dental implant systems. Methods: We evaluated 42 torque wrenches used in different dental clinics in Mashhad, Iran, using a digital torque meter (Mark 10). High (25, 30 and 35 N·cm) and low (15 N·cm) levels of torque were examined. Ten tests were performed on each wrench, and the mean value was considered as the real torque of the instrument. Different characteristics (Model (spring or friction), System, Duration of use, Sterilization, Calibration) of each wrench were also recorded. The difference between the torque applied by the instrument and the target torque required was calculated numerically and as a percentage. A one-way ANOVA and Student's t-test were used for statistical analysis. Results: There was a significant difference between the error at higher torques in the spring wrenches compared with the friction wrenches ($P<0.05$). At higher torques, an error greater than 10% was more common in the friction wrenches (29.4%) than in the spring wrenches (4.3%). No significant differences were observed regarding the duration instruments usage and the mean numerical error at high and low torque. In the wrenches that had been used for more than three years, 21.1% of samples showed an error of more than 10%, compared with 9.5% in wrenches that had been used for less than three years ($P=0.39$). At higher torques the Straumann system produced the least error and the Biohorizon system produced the greatest error which was significantly greater than the other systems ($P<0.05$). Conclusion: Our results indicate that spring wrenches produce more accurate results than friction wrenches; however, friction wrenches are more reliable at lower torques than higher torques. The length of time in use and sterilization of torque wrenches does not affect the function of the instruments significantly. The precision of the instrument system used is also important.

کلمات کلیدی:

Implant, torque, torque wrench