Effects of repeated manual disassembly and reassembly on the positional stability of various implant-abutment complexes: an experimental study

Semper W, Heberer S, Mehrhof J, Schink T, Nelson K. Effects of repeated manual disassembly and reassembly on the positional stability of various implant-abutment complexes: an experimental study. Int J Oral Maxillofac Implants. 2010; 25: 86-94.

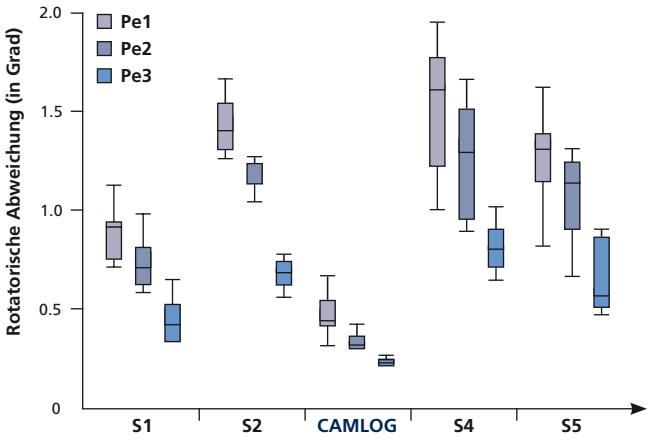
SUMMARY: Rotationsstabilität des CAMLOG® Implantatsystems ist signifikant größer als die aller anderen untersuchten Implantatsysteme

Ziel

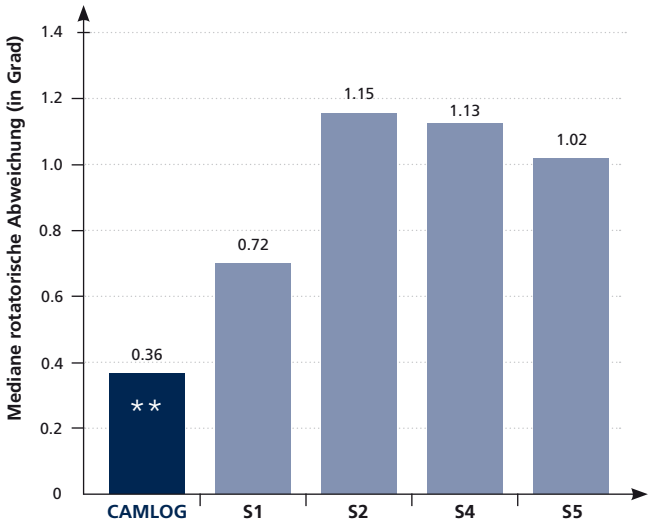
Beurteilung der Positionsstabilität von fünf häufig verwendeten Implantat-Abutment-Verbindungen in vitro durch die Messung rotatorischer, vertikaler und verkippender Positionsänderungen nach manueller De- und Remontage.

Ergebnisse

Rotatorische Abweichungen: Beim CAMLOG® Implantatsystem resultierten die geringsten rotatorischen Abweichungen.



Rotatorische Abweichung. *Fünf Implantatsysteme wurden getestet: S1, S2, S4, S5 und CAMLOG. Pe1, 2, und 3 sind Ergebnisse von drei unabhängigen Testpersonen. Abbildung adaptiert von Abb. 4 aus Semper et al., 2010.*



Mediane rotatorische Abweichung. *Das CAMLOG® Implantatsystem zeigte eine signifikant geringere rotatorische Abweichung als alle anderen getesteten Implantatsysteme (**p<0,001). Daten extrahiert aus Semper et al., 2010.*

Das Ausmaß der rotatorischen Freiheit beeinflusst die Wahrscheinlichkeit von Schraubenlockerungen[1], und es ist bekannt, dass die Stabilität der Implantat-Abutment-Verbindung Auswirkungen auf den Erfolg der Implantatbehandlung hat[2].

Vertikale Abweichungen: Vertikale Abweichungen waren bei den Systemen mit konischen Elementen signifikant höher.

Abweichungen in der Angulation: Zwischen den untersuchten Implantatsystemen wurden keine signifikanten Unterschiede beobachtet.

Schlussfolgerung

Das Design der Implantat-Abutment-Verbindung beeinflusst die rotatorische, vertikale und anguläre Passgenauigkeit.

Das CAMLOG® Implantatsystem schnitt am besten ab mit den geringsten rotatorischen Abweichungen bei allen Anwendern und allen getesteten Implantatsystemen.

[1] *de Barros Carrilho et al. Int J Prosthodont 2005;18:165–166*
[2] *Salinas TJ. Pract Proc Aesthet Dent 2001;13:352*

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PURPOSE: The purpose of this study was to evaluate rotational, vertical, and canting changes in the position of the rotation-safe component in the implant-abutment assemblies of five different implant systems (ITI, Steri-Oss, Camlog, Astra Tech, and Replace Select) after manual removal and reassembly.

MATERIAL AND METHODS: Prefabricated stainless steel models were used for each implant system, into which six implants were fixated with polymethylmethacrylate resin. Rotation-safe abutments (components) were screwed into the implants according to the manufacturers' specifications. Three test persons with varying knowledge of the theory and practice of implant dentistry manually assembled and reassembled the implant-abutment joint using each system-specific screwdriver 20 times each. A coordinate reading machine was used to detect discrepancies in position after each reassembly in relation to a coordinate system. Rotational freedom, changes in vertical height, and deviations in angulation were assessed. Statistical analysis was performed based on the nonparametric analysis of variance of repeated measurements.

RESULTS: The tested complexes showed rotational freedom that ranged from 0.92 to 4.92 degrees, with significant differences between the systems. Camlog was significantly different from all other systems tested regarding rotational freedom, whereas Steri-Oss, Astra Tech, and Replace Select showed no significant difference between each other because of their nondiscrepant mean degree of rotational freedom. Vertical alterations in position ranged from 1 to 83 microm. A statistically significant difference was detected between butt-joint and beveled implant-abutment connections, with ITI and Astra Tech showing no significant difference when compared to each other, but displaying a significant difference versus all other systems tested. Canting discrepancies were not significant, with no influence of implant system or test person clearly detectable.

CONCLUSION: Three-dimensional changes in the location of the abutment in relation to the implant result after manual assembly and reassembly of the implant-abutment complex.

Bestellung

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☐ **Bitte lassen Sie mir nähere Informationen zukommen.**

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