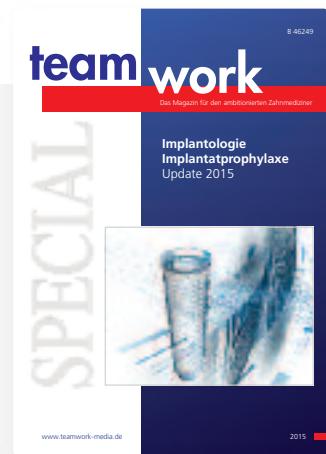


Aktuelle Entwicklungen, Systeme, Konzepte – Übersicht und Fallbeispiel

Implantieren mit Zirkonoxid

Ein Beitrag von Dr. Jochen Mellinghoff MSc.



Literaturangabe

- [1] H. Schliephake, J. Reiss, R. Urban, F. W. Neukam und H. Günay, „Freisetzung von Titan aus Schraubenimplantaten,” *Z Zahnärztl Implantol*, pp. 6-10, VII 1991.
- [2] H. Schliephake, G. Reiss, R. Urban, F. W. Neukam und S. Guckel, „Metal release from titanium fixtures during placement in the mandible: an experimental study.,“ *Int J Oral Maxillofac Implants*, Bd. 8, Nr. 5, pp. 502-511, 1993.
- [3] H. Schliephake, F. Neukam und R. Urban, „Titanbelastung parenchymatöser Organe nach Insertion von Titanimplantaten,” *Z Zahnärztl Implantol*, Bd. V, pp. 180 - 184, 1989.
- [4] C. Aydin, H. Yilmaz und S. O. Ata, „Single-tooth zirconia implant located in anterior maxilla. A clinical report.,“ *N Y State Dent J*, Bd. 76, Nr. 1, pp. 30-33, Jan 2010.
- [5] A. E. Borgonovo, G. Corrocher, M. Dolci, R. Censi, V. Vassori und C. Maiorana, „Clinical evaluation of zirconium dental implants placed in esthetic areas: a case series study.,“ *Eur J Esthet Dent*, Bd. 8, Nr. 4, pp. 532-545, 2013.
- [6] J. Oliva, X. Oliva und J. D. Oliva, „Zirconia implants and all-ceramic restorations for the esthetic replacement of the maxillary central incisors.,“ *Eur J Esthet Dent*, Bd. 3, Nr. 2, pp. 174-185, 2008.
- [7] R. J. Kohal und G. Klaus, „A zirconia implant-crown system: a case report.,“ *Int J Periodontics Restorative Dent*, Bd. 24, Nr. 2, pp. 147-153, 2004.
- [8] G. Schioli, „Single-tooth implant restorations in the esthetic zone with PureForm ceramic crowns: 3 case reports.,“ *J Oral Implantol*, Bd. 30, Nr. 6, pp. 358-363, 2004.
- [9] R. E. Jung, I. Sailer, C. H. F. T. Attin und P. Schmidlin, „In vitro color changes of soft tissues caused by restorative materials.,“ *Int J Periodontics Restorative Dent*, Bd. 27, Nr. 3, pp. 251-257, 2007.
- [10] H. Schmotzer, S. Stübinger und D. Velten, „Colorimetry on implant surface for esthetically demanding applications,” in *Implants - Materials - Surfaces - Manufacturing*, Interlaken, 2013.
- [11] L. Rimondini, L. Cerroni, A. Carrassi und P. Torricelli, „Bacterial colonization of zirconia ceramic surfaces: an in vitro and in vivo study.,“ *Int J Oral Maxillofac Implants*, Bd. 17, Nr. 6, pp. 793-798, 2002.
- [12] A. Scarano, M. Piattelli, S. Caputi, G. A. Favero und A. Piattelli, „Bacterial adhesion on commercially pure titanium and zirconium oxide disks: an in vivo human study.,“ *J Periodontol*, Bd. 75, Nr. 2, pp. 292-296, 2004.
- [13] R. Glauser, I. Sailer, A. Wohlwend, S. Studer, M. Schibli und P. Schärer, „Experimental zirconia abutments for implant-supported single-tooth restorations in esthetically demanding regions: 4-year results of a prospective clinical study.,“ *Int J Prosthodont*, Bd. 17, Nr. 3, pp. 285-290, 2004.
- [14] L. Canullo, „Clinical outcome study of customized zirconia abutments for single-implant restorations.,“ *Int J Prosthodont*, Bd. 20, Nr. 5, pp. 489-493, 2007.
- [15] J. F. Mellinghoff, „Qualität des periimplantären Weichgewebemanagements von Zirkonoxid-Implantaten,” *Z Zahnärztl Impl*, pp. 8-, 1-17 2010.
- [16] J. Wiltfang, „Metallfreie Versorgung ? Wunsch oder Wirklichkeit.,“ 2008.
- [17] M. Degidi, L. Artese, A. Scarano, V. Perrotti, P. Gehrke und A. Piattelli, „Inflammatory infiltrate, microvessel density, nitric oxide synthase expression, vascular endothelial growth factor expression, and proliferative activity in peri-implant soft tissues around titanium and zirconium oxide healing caps.,“ *J Periodontol*, Bd. 77, Nr. 1, pp. 73-80, 2006.
- [18] M. Degidi, L. Artese, A. Piattelli, A. Scarano, J. A. Shibli, M. Piccirilli, V. Perrotti und G. Iezzi, „Histological and immunohistochemical evaluation of the peri-implant soft tissues around machined and acid-etched titanium healing abutments: a prospective randomised study.,“ *Clin Oral Investig*, 2011.
- [19] M. Welander, I. Abrahamsson und T. Berglundh, „The mucosal barrier at implant abutments of different materials.,“ *Clin Oral Implants Res*, Bd. 19, Nr. 7, pp. 635-641, 2008.

- [20] M. Gahlert, D. Burtscher, I. Grunert, H. Kniha und E. Steinhauser, „Failure analysis of fractured dental zirconia implants.,“ *Clin Oral Implants Res*, Bd. 23, Nr. 3, pp. 287-293, Mar 2012.
- [21] J. F. Mellinghoff, „Erste klinische Ergebnisse zu dentalen Schraubenimplantaten aus Zirkondioxid,“ *ZZI*, pp. 288-293, 4 2006.
- [22] W. Rieger, S. Köbel und W. Weber, „Herstellung und Bearbeitung von Zirkondioxid-Keramiken für dentale Anwendungen,“ *Digital Dental News* , Mai, Juni 2007.
- [23] R.-J. Kohal, M. Wolkewitz und C. Mueller, „Alumina-reinforced zirconia implants: survival rate and fracture strength in a masticatory simulation trial.,“ *Clin Oral Implants Res*, Bd. 21, Nr. 12, pp. 1345-1352, Dec 2010.
- [24] A. E. Borgonovo, V. Vavassori, R. Censi, J. L. Calvo und D. Re, „Behavior of endosseous one-piece yttrium stabilized zirconia dental implants placed in posterior areas.,“ *Minerva Stomatol*, Bd. 62, Nr. 7-8, pp. 247-257, 2013.
- [25] R.-J. Kohal, M. Knauf, B. Larsson, H. Sahlin und F. Butz, „One-piece zirconia oral implants: one-year results from a prospective cohort study. 1. Single tooth replacement.,“ *J Clin Periodontol*, Bd. 39, Nr. 6, pp. 590-597, Jun 2012.
- [26] M. Payer, V. Arnetzl, R. Kirmeier, M. Koller, G. Arnetzl und N. Jakse, „Immediate provisional restoration of single-piece zirconia implants: a prospective case series - results after 24 months of clinical function.,“ *Clin Oral Implants Res*, Bd. 24, Nr. 5, pp. 569-575, May 2013.
- [27] F. Brüll, A. J. van Winkelhoff und M. S. Cune, „Zirconia dental implants: a clinical, radiographic, and microbiologic evaluation up to 3 years.,“ *Int J Oral Maxillofac Implants*, Bd. 29, Nr. 4, pp. 914-920, 2014.
- [28] M. Andreiotelli und R.-J. Kohal, „Fracture strength of zirconia implants after artificial aging.,“ *Clin Implant Dent Relat Res*, Bd. 11, Nr. 2, pp. 158-166, Jun 2009.
- [29] R. J. Kohal, M. Wolkewitz und A. Tsakona, „The effects of cyclic loading and preparation on the fracture strength of zirconium-dioxide implants: an in vitro investigation.,“ *Clin Oral Implants Res*, Bd. 22, Nr. 8, pp. 808-814, Aug 2011.
- [30] M. Gahlert, S. Röhling, M. Wieland, S. Eichhorn, H. Küchenhoff und H. Kniha, „A comparison study of the osseointegration of zirconia and titanium dental implants. A biomechanical evaluation in the maxilla of pigs.,“ *Clin Implant Dent Relat Res*, Bd. 12, Nr. 4, pp. 297-305, Dec 2010.
- [31] M. Gahlert, S. Roehling, C. M. Sprecher, H. Kniha, S. Milz und K. Bormann, „In vivo performance of zirconia and titanium implants: a histomorphometric study in mini pig maxillae.,“ *Clin Oral Implants Res*, Bd. 23, Nr. 3, pp. 281-286, Mar 2012.
- [32] L. Sennerby, A. Dasmah, B. Larsson und M. Iverhed, „Bone tissue responses to surface-modified zirconia implants: A histomorphometric and removal torque study in the rabbit.,“ *Clin Implant Dent Relat Res*, Bd. 7 Suppl 1, pp. S13--S20, 2005.
- [33] R. J. Kohal, D. Weng, M. Bächle und J. R. Strub, „Loaded custom-made zirconia and titanium implants show similar osseointegration: an animal experiment.,“ *J Periodontol*, Bd. 75, Nr. 9, pp. 1262-1268, Sep 2004.
- [34] H. Schliephake, T. Hefti, F. Schlottig, P. Gédet und H. Staedt, „Mechanical anchorage and peri-implant bone formation of surface-modified zirconia in minipigs.,“ *J Clin Periodontol*, Bd. 37, Nr. 9, pp. 818-828, Sep 2010.
- [35] O. Hoffmann, N. Angelov, G. Zafiropoulos und S. Andreana, „Osseointegration of zirconia implants with different surface characteristics: an evaluation in rabbits.,“ *Int J Oral Maxillofac Implants*, Bd. (2), pp. 352-8, 2012.
- [36] R. K. Schenk und D. Buser, „Osseointegration: a reality,“ *Periodontol 2000*, pp. 22-35, 1998.
- [37] J. Oliva, X. Oliva und J. D. Oliva, „One-year follow-up of first consecutive 100 zirconia dental implants in humans: a comparison of 2 different rough surfaces.,“ *Int J Oral Maxillofac Implants*, Bd. 22, Nr. 3, pp. 430-435, 2007.
- [38] M. Lambrich und G. Igihaut, „Vergleich der Überlebensrate von Zirkondioxid- und Titanimplantaten,“ *Z Zahnräztl Impl*, Bd. 24 (3), 2008.
- [39] M. Payer, A. Heschl, M. Koller, G. Arnetzl, M. Lorenzoni und N. Jakse, „All-ceramic restoration of zirconia two-piece implants - a randomized controlled clinical trial.,“ *Clin Oral Implants Res*, Feb 2014.
- [40] N. Cionca, N. Müller und A. Mombelli, „Two-piece zirconia implants supporting all-ceramic crowns: A prospective clinical study.,“ *Clin Oral Implants Res*, Mar 2014.
- [41] A. W. Gargiulo, F. M. Wentz und B. Orban, „Dimensions and relations of the Dentogingival Junction in Humans,“ *Journal of Peridontology*, pp. 261-267, 1961.
- [42] T. Berglundh, J. Lindhe, I. Ericsson, C. P. Marinello, B. Liljenberg und P. Thomsen, „The soft tissue barrier at implants and teeth.,“ *Clin Oral Implants Res*, Bd. 2, Nr. 2, pp. 81-90, 1991.