

Clinical Oral Implants Research / Volume 33, Issue 9 / pp. 913-920

ORIGINAL ARTICLE

Occurrence of complications in patients restored with implants

Denis Cecchinato , Massimiliano Marino, Jan Håkansson, Jan Lindhe, Jan Derks

First published: 30 June 2022

<https://doi.org/10.1111/clr.13970>

 [VIEW METRICS](#)

Accessibility issue? [Request accessibility update.](#)



Abstract

Objectives

To determine the occurrence and clustering of complications in subjects restored with fixed implant-supported prostheses.

Methods

In the present retrospective case series, 241 subjects treated at one clinical centre and provided with 729 implants were included. A clinical and radiographic examination was performed after a mean follow-up period of 4.8 ± 2.0 years. Additional information on occurrence of technical (chipping, loss of retention, fracture of components) and biological complications (marginal bone loss, implant loss) during follow-up was extracted from patient records. For each type of complication and complications overall, regression analyses were performed to identify potential risk factors. Cox regression analyses were used to evaluate time to event for implant loss and technical complications.

Results

In all, 30% of the 241 patients presented with at least one complication of technical and/or biological character during the follow-up period. Technical complications affected 19.5% of subjects, while 14.1% presented with marginal bone loss >2 mm. Implant loss occurred in 4.6% of subjects. While technical complications were noted already early during the maintenance period (<1200 days), implant loss typically occurred during a later phase. A small subgroup of subjects (7.9%) experienced more than one type of complication.

Conclusions

Complications occurred frequently and the most common type of complication was of technical character. Technical and biological complications occurred independently of each other.

CONFLICT OF INTEREST

Dr. Derks reported speakers honoraria from the Osteology Foundation, Dentsply Sirona Implants, Straumann Group and received research grants from the Eklund Foundation and Electro Medical Systems.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available from the corresponding author upon reasonable request.

Supporting Information



Filename	Description
clr13970-sup-0001-AppendixS1.docx Word 2007 document , 153.7 KB	Appendix S1
clr13970-sup-0002-AppendixS2.docx Word 2007 document , 50.1 KB	Appendix S2

Please note: The publisher is not responsible for the content or functionality of any supporting information supplied by the authors. Any queries (other than missing content) should be directed to the corresponding author for the article.

REFERENCES



Berglundh, T., Armitage, G., Araujo, M. G., Avila-Ortiz, G., Blanco, J., Camargo, P. M., Chen, S., Cochran, D., Derks, J., Figuero, E., Hämmerle, C. H. F., Heitz-Mayfield, L. J. A., Huynh-Ba, G., Iacono, V., Koo, K. T., Lambert, F., McCauley, L., Quirynen, M., Renvert, S., . . . Zitzmann, N. (2018). Peri-implant diseases and conditions: Consensus report of workgroup 4 of the 2017 world workshop on the classification of periodontal and peri-implant diseases and conditions. *Journal of Clinical Periodontology*, **45**(Suppl 20), S286–S291. doi:<https://doi.org/10.1111/jcpe.12957>

[PubMed](#) | [Web of Science®](#) | [Google Scholar](#)

Brägger, U., Karoussis, I., Persson, G. R., Pjetursson, B. E., Salvi, G. E., & Lang, N. P. (2005). Technical and biological complications/failures with single crowns and fixed partial dentures on implants: A 10-year prospective cohort study. *Clinical Oral Implants Research*, **16**(3), 326–334. <https://doi.org/10.1111/j.1600-0501.2005.01105.x>

[CAS](#) | [PubMed](#) | [Web of Science®](#) | [Google Scholar](#)

Cecchinato, D., Parpaiola, A., & Lindhe, J. (2013). A cross-sectional study on the prevalence of marginal bone loss among implant patients. *Clinical Oral Implants Research*, **24**(1), 87–90. <https://doi.org/10.1111/j.1600-0501.2012.02457.x>

[PubMed](#) | [Web of Science®](#) | [Google Scholar](#)

Cecchinato, D., Parpaiola, A., & Lindhe, J. (2014). Mucosal inflammation and incidence of crestal bone loss among implant patients: A 10-year study. *Clinical Oral Implants Research*, **25**(7), 791–796. <https://doi.org/10.1111/clr.12209>

[CAS](#) | [PubMed](#) | [Web of Science®](#) | [Google Scholar](#)

Derks, J., Schaller, D., Hakansson, J., Wennström, J. L., Tomasi, C., & Berglundh, T. (2016). Effectiveness of implant therapy analyzed in a Swedish population: Prevalence of peri-implantitis. *Journal of Dental Research*, **95**(1), 43–49. <https://doi.org/10.1177/0022034515608832>

[CAS](#) | [PubMed](#) | [Web of Science®](#) | [Google Scholar](#)

Karlsson, K., Derks, J., Håkansson, J., Wennström, J. L., Molin Thoren, M., Petzold, M., & Berglundh, T. (2018). Technical complications following implant-supported restorative therapy performed in Sweden. *Clinical Oral Implants Research*, **29**(6), 603–611. <https://doi.org/10.1111/clr.13271>

[PubMed](#) [Web of Science®](#) [Google Scholar](#)

Karlsson, K., Derks, J., Håkansson, J., Wennström, J. L., Petzold, M., & Berglundh, T. (2019). Interventions for peri-implantitis and their effects on further bone loss: A retrospective analysis of a registry-based cohort. *Journal of Clinical Periodontology*, **46**(8), 872–879. <https://doi.org/10.1111/jcpe.13129>

[PubMed](#) [Web of Science®](#) [Google Scholar](#)

Karlsson, K., Derks, J., Wennström, J. L., Petzold, M., & Berglundh, T. (2020). Occurrence and clustering of complications in implant dentistry. *Clinical Oral Implants Research*, **31**(10), 1002–1009. <https://doi.org/10.1111/clr.13647>

[PubMed](#) [Web of Science®](#) [Google Scholar](#)

Karlsson, K., Derks, J., Wennström, J. L., Petzold, M., & Berglundh, T. (2022). Health economic aspects of implant-supported restorative therapy. *Clinical Oral Implants Research*, **33**(2), 221–230. <https://doi.org/10.1111/clr.13885>

[PubMed](#) [Web of Science®](#) [Google Scholar](#)

Kreissl, M. E., Gerds, T., Muche, R., Heydecke, G., & Strub, J. R. (2007). Technical complications of implant-supported fixed partial dentures in partially edentulous cases after an average observation period of 5 years. *Clinical Oral Implants Research*, **18**(6), 720–726. <https://doi.org/10.1111/j.1600-0501.2007.01414.x>

[PubMed](#) [Web of Science®](#) [Google Scholar](#)

Roccuzzo, M., Bonino, F., Aglietta, M., & Dalmaso, P. (2012). Ten-year results of a three arms prospective cohort study on implants in periodontally compromised patients. Part 2: Clinical results. *Clinical Oral Implants Research*, **23**(4), 389–395. <https://doi.org/10.1111/j.1600-0501.2011.02309.x>

[PubMed](#) [Web of Science®](#) [Google Scholar](#)

Roccuzzo, M., Bonino, L., Dalmaso, P., & Aglietta, M. (2014). Long-term results of a three arms prospective cohort study on implants in periodontally compromised patients: 10-year data around sandblasted and acid-etched (SLA) surface. *Clinical Oral Implants Research*, **25**(10), 1105–1112. <https://doi.org/10.1111/clr.12227>

[CAS](#) [PubMed](#) [Web of Science®](#) [Google Scholar](#)

Romandini, M., Lima, C., Pedrinaci, I., Araoz, A., Soldini, M. C., & Sanz, M. (2021). Prevalence and risk/protective indicators of peri-implant diseases: A university-representative cross-sectional study. *Clinical Oral Implants Research*, **32**(1), 112–122. <https://doi.org/10.1111/clr.13684>

[PubMed](#) [Web of Science®](#) [Google Scholar](#)

Schwarz, F., Derks, J., Monje, A., & Wang, H. L. (2018). Peri-implantitis. *Journal of Clinical Periodontology*, **45**(Suppl 20), S246–S266. <https://doi.org/10.1111/jcpe.12954>

[PubMed](#) [Web of Science®](#) [Google Scholar](#)

Wada, M., Mameno, T., Onodera, Y., Matsuda, H., Daimon, K., & Ikebe, K. (2019). Prevalence of peri-implant disease and risk indicators in a Japanese population with at least 3 years in function-a multicentre retrospective study. *Clinical Oral Implants Research*, **30**(2), 111–120. <https://doi.org/10.1111/clr.13397>

[PubMed](#) [Web of Science®](#) [Google Scholar](#)

Wittneben, J.-G., Buser, D., Salvi, G. E., Burgin, W., Hicklin, S., & Brägger, U. (2014). Complication and failure rates with implant-supported fixed dental prostheses and single crowns: A 10-year retrospective study. *Clinical Implant Dentistry and Related Research*, **16**(3), 356–364. <https://doi.org/10.1111/cid.12066>

[PubMed](#) [Web of Science®](#) [Google Scholar](#)

Citing Literature



[Download PDF](#)

ABOUT WILEY ONLINE LIBRARY

[Privacy Policy](#)

[Terms of Use](#)

[About Cookies](#)

[Manage Cookies](#)

[Accessibility](#)

[Wiley Research DE&I Statement and Publishing Policies](#)

HELP & SUPPORT

[Contact Us](#)

[Training and Support](#)

[DMCA & Reporting Piracy](#)

[Sitemap](#)

OPPORTUNITIES

[Subscription Agents](#)

[Advertisers & Corporate Partners](#)

CONNECT WITH WILEY

[The Wiley Network](#)

[Wiley Press Room](#)

Copyright © 1999-2026 John Wiley & Sons, Inc or related companies. All rights reserved, including rights for text and data mining and training of artificial intelligence technologies or similar technologies.

WILEY