

First long-term study on two-piece zirconia implants published

No peri-implantitis after nine years of implant function



Figs. 1a & b: Excellent aesthetics: Increase in keratinised gingiva between baseline (left) and the nine-year follow-up (right; © Brunello et al. 2022¹).

The nine-year study results at a glance:

- No cases of peri-implantitis
- High implant survival
- Healthy and stable soft tissue (bleeding on probing [BOP]: 12.9%; maximum mucosal recession [MR]: 1 mm)
- No implant fractures
- Stable plaque indices (PI), probing depth (PD), and BOP at two- and nine-year follow-ups
- Increase in keratinised gingiva between baseline and the nine-year follow-up

The first long-term study on two-piece zirconia dental implants has been published—in *Clinical Oral Implants Research*—closing a major research gap.¹ Over a period of nine years, the independent study, conducted at Heinrich Heine University Düsseldorf in Germany, examined integrated implants of the Patent™ brand (Zircon Medical) placed in the posterior region, which is subjected to higher occlusal loads.¹ The research team, led by Prof. Jürgen Becker, who is director of the Department of Oral Surgery, concluded that the Patent™ Dental Implant System provides a predictable and long-term tooth replacement solution, as it was able to maintain healthy and stable hard and soft tissue over the nine years of follow-up.

After nine years of implant function, none of the implants developed peri-implantitis, the mean bleeding on probing was 12.9% and the maximum mucosal recession was 1 mm. The plaque indices, pocket depths and bleeding on probing at the two- and nine-year follow-ups remained stable.

High aesthetics was achieved by the clinical improvements of the soft tissue, showing an increase in keratinised gingiva between baseline and the nine-year follow-up (Figs. 1a & b). No implant fractures were reported.

Significance of the study

Prior to this study, there had been no long-term observations of two-piece zirconia implants. The implant systems currently available on the market typically undergo fewer long-term studies, and the existing studies are often limited to observation periods of a maximum of five years. On one hand, many of the implant systems that have undergone long-term scientific observation are no longer on the market. On the other hand, new product lines are being introduced so rapidly that scientific evaluation over longer periods is not being conducted.²

“Studies have shown that complications after implant placement, including peri-mucositis and peri-implantitis, occur often within the first five years and significantly increase after eight years, posing a risk for developing general diseases. Therefore, it was important for us to provide independent scientific data on the clinical success of the Patent™ Dental Implant System that extends beyond these time frames”, commented Marco Waldner, CEO of Zircon Medical, in view of the remarkable nine-year results.

References

- ¹ Brunello G, Rauch N, Becker K, Hakimi AR, Schwarz F, Becker J. Two-piece zirconia implants in the posterior mandible and maxilla: a cohort study with a follow-up period of 9 years. *Clin Oral Implants Res.* 2022 Dec;33(12):1233–44. doi: 10.1111/clr.14005.
- ² Thiem DG, Stephan D, Kriha K, Kohal RJ, Röhling S, Spies BC, Stimmelmayer M, Grötz KA. German S3 guideline on the use of dental ceramic implants. *Int J Implant Dent.* 3 Oct 2022 ;8(1):43. doi: 10.1186/s40729-022-00445-z. Erratum in: *Int J Implant Dent.* 2023 Jan 17;9(1):2.

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