What are the long-term survival and complication rates of complete-arch fixed implant rehabilitation in edentulous patients?

Kamran Ali[1] and Elizabeth J. Kay[1]

A Commentary on

Papaspyridakos P, Bordin T B, Natto Z S, El-Rafie K, Pagni S E, Chochlidakis K, Ercoli C, Weber H P.

Complications and survival rates of 55 metal-ceramic implant-supported fixed complete-arch prostheses: A cohort study with mean 5-year follow-up. *J Prosthet Dent* 2019; DOI: 10.1016/j.prosdent.2019.01.022. [Epub ahead of print] PubMed PMID: 30982622.

Practice points

- Long-term survival rates of metal-ceramic fixed implant prostheses for full arch rehabilitation in edentulous patients are good but biologic and technical complications are significant.
- The prevalence of peri-implant disease remains high despite improvements in implant treatments and can significantly compromise the long-term success and survival rates of implants. Future research should prioritise primary prevention of peri-implant disease.

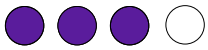
Abstract

Cohort selection The study cohort was selected through screening of electronic records of all patients rehabilitated with interforaminal implants and implant-supported fixed complete dental prostheses (IFCDPs) over an 11-year period at the Tufts University School of Dental Medicine. Evaluation was based on medical and dental history; clinical oral examination of hard and soft tissues; and radiographic examination during a single visit.

Data analysis Survival and failure rates of implants and prostheses were recorded based on predefined criteria. Along with descriptive statistics, the observed annual incidence, and the estimated five- and ten-year biologic and technical complications were computed with 95% confidence intervals.

Results The study cohort included 41 patients with an average age of 65.8 years (range = 39 to 88 years) and comprised 19 females and 22 males. A total of 359 moderately rough surface dental implants (Nobel Biocare, Straumann, Biomet 3i) were used to rehabilitate 36 cement-retained and 19 screw-retained metal-ceramic IFCDPs in maxilla (N = 32) mandible (N = 23). The mean observation times for implants and prostheses were 5 and 7.5 years, respectively. Two implant failures in a single patient were recorded 11 years post-insertion, yielding an implant survival rate of 99.4%. The cumulative prostheses survival rate was 98.2% (100% at five years and 92.9% at ten years). Biologic and/or technical complications were associated with all 55 prostheses. Among major complications, the most frequent biologic complication was peri-implantitis while porcelain fractures were the most common technical complication. The cumulative rates of 'prostheses free of biologic complications' were 50.4% (95% CI: 36.4% to 63.0%) at five years and 10.1% (95% CI: 3.5% to 20.8%) at ten years. The cumulative rates for 'prosthesis free of technical complications' were 56.4% (95% CI: 41.7% to 68.8%) at five years and 9.8% (95% CI: 3.2% to 21.0%) at ten years.

Conclusions Metal-ceramic implant-supported fixed full arch dental prostheses show high survival rates at five-year follow-up, including an implant survival rate of 99.4% and prosthesis survival rate of 98.2%. However biological and technical complications were observed in 47.1% and 42%, respectively.

GRADE rating 

Commentary

This is a comprehensive cohort study aimed at evaluating the long-term survival rates of implant-supported full arch prostheses in adult patients. The results are promising and indicate that full-arch rehabilitation with fixed implant-supported prostheses are a viable option with good survival rates. Although full arch rehabilitations with fixed implants are reported to be successful,[1] this study adds value by providing evidence regarding long-term survival rates and complications. The findings also underscore the importance of regular long-term follow up with meticulous clinical assessment to prevent and manage minor and major complications in implant patients. Clinicians providing dental implants need to identify and follow rigorous protocols for implant maintenance. Global trends indicate that implants are being used increasingly to replace missing or diseased teeth and regular follow-up of patients for implant maintenance is more important than before to avoid complications and failures.[2,3]

The study provided no details regarding some of the potential confounding factors, including the medical history and oral hygiene practices, and it is not possible to ascertain if these could have contributed to the observed failures and complications in this cohort. Given some inherent weaknesses in retrospective cohort studies, future studies based on prospective and clinical studies involving randomisation may provide better evidence regarding the success of implant-supported full arch rehabilitations.

Peri-implantitis was observed to be the most common major biologic complication in the study population and this finding is in accord with the contemporary literature.[4] While conservative measures and surgical interventions are reported to be effective in the management of peri-implantitis,[5,6] clinicians must focus on its prevention.[7] There is growing evidence to support the use of soft tissue grafting during implant placement to improve peri-implant health.[8] This approach may facilitate

the gain of keratinised mucosa to improve bleeding indices and higher marginal bone levels and minimise marginal bone loss.[9] Nevertheless, more research aimed at investigating the impact of soft tissue augmentation on the frequency of peri-implantitis is suggested to determine the criteria for soft tissue augmentation for dental implants.

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Address for correspondence

Peninsula Dental School

University of Plymouth, Plymouth,Devon,UK

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