

Re: COVID-19 as a factor associated with early dental implant failures: A retrospective analysis—There is a need for research on the effect of COVID-19 vaccination on dental implant failure: Implications for policymaking and insurance

Dear Editors,

We are writing to address (1) the research conducted by Sezer and Soylu¹ titled “COVID-19 as a factor associated with early dental implant failures: A retrospective analysis,” and (2) explore the need of critical evaluation and future research on the effect of COVID-19 vaccination on dental implant failure since it has implications for policymaking and is of importance to the public.

For the first part, while we acknowledge the significance of Sezer and Soylu¹ contribution as the first study to analyze the effect of COVID-19 on early implant failure, we believe there are crucial aspects that warrant further exploration to ensure patient safety and improve dental implant outcomes.

The manuscript presents a retrospective study design that adheres to the principles of the Declaration of Helsinki and follows the guidelines of Strengthening the Reporting of Observational Studies in Epidemiology (STROBE). The study is based on a sizable cohort of patients who received dental implants at a university setting between March 2020 and April 2022. However, there are few limitations that may impact the robustness of the findings and necessitate cautious interpretation.

- First, the study's exclusion criteria may introduce selection bias.² The exclusion of patients with missing general health- or implant-related data, those lost to follow-up, and those without a reverse transcriptase-polymerase chain reaction (RT-PCR) test for COVID-19 could potentially influence the representation of the overall population under investigation. Additionally, the exclusion of zygomatic implants, implants replacing failed implants, and immediate and early loading cases may limit the generalizability of the findings to these specific scenarios.
- Moreover, the study's retrospective nature might introduce information bias due to incomplete or inconsistent recording of data from patient files.³ Despite the authors' efforts to cross-examine and verify records, uncertainties related to data accuracy remain, and this limitation shall be recognized when interpreting the results.
- Furthermore, the statistical analysis employed logistic regression models with the generalized estimating equation (GEE) method. While GEE accounts for repeated observations,⁴ the choice of this

statistical approach may not adequately address potential confounders and effect modifiers that could impact implant failure rates. It is crucial to consider additional variables such as socioeconomic factors, patient health behaviors, and surgical techniques in future research to strengthen the validity of the findings.

For the second part to discuss in this letter, considering the observed trends in North American private practices, which remains unpublished, of increased implant failure rates in patients who received the COVID-19 vaccine before implant surgery, it is necessary to conduct research to understand the underlying mechanisms and potential risk factors, which to date has not been reported. This research shall explore the incidence of peri-implantitis in vaccinated individuals and differentiate between early and late implant failures to better assess the temporal relationship with vaccination. Interestingly, the observed increase in implant failure, regardless of operator experience and implant brand, warrants focused attention from the dental community and policymakers, as it suggests potential concerns beyond individual practitioner performance. However, the impact of operator experience and implant brand on implant failure rates should be investigated. From a policymaking perspective, the potential association between COVID-19 vaccination and dental implant failure necessitates proactive consideration. If future research confirms a significant link, guidelines should be developed or modified to aid dental implant practitioners in assessing patient vaccination status as part of the pre-implant evaluation process. Insurance providers should also be prepared to adjust policies to accommodate potential revision surgeries or additional treatments resulting from increased implant failure rates.

In conclusion, despite COVID-19 and its variants can impact oral health,⁵ the study by Sezer and Soylu serves as an essential starting point for exploring the lack of relationship between COVID-19 and dental implant failure. However, critical evaluation reveals several limitations, warranting cautious interpretation of the findings. Also, we wish the relationship between a COVID-19 vaccinated population and dental implant failure is examined in the future as nothing available in the literature examining despite the observations from our colleagues in private practice, and other oral adverse reactions observed after COVID-19 immunization.⁶ Thus, to ensure patient safety and enhance the quality of implant dentistry, we urge *Clinical Implant Dentistry and*

Related Research to support future research that addresses the highlighted concerns and investigates the implications for policymaking and insurance in the field.

Thank you for considering this perspective, and we look forward to witnessing the advancement of implant dentistry through evidence-based research in your prestigious journal.

AUTHOR CONTRIBUTIONS

Kelvin I. Afrashtehfar: Conceptualization, literature review, drafting the article, critical revision and approval of manuscript. **J. W. Martin Kim:** Conceptualization, critical revision and approval of manuscript.

CONFLICT OF INTEREST STATEMENT

The authors declare no conflicts of interest.

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