Review of: "Evaluation of the Tobacco Heating System (THS) During Closed Lower Limb Fracture Healing in Trauma Smokers' Patients"

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Potential competing interests: No potential competing interests to declare.

This study on the impact of THS in trauma patients undergoing fracture healing is of significant clinical interest, especially given the high prevalence of smoking-related complications in orthopedic recovery. However, several issues related to novelty, methodological clarity, and clinical relevance need to be addressed to strengthen the contribution of this work.

Introduction:

1. Novel Insights and Clinical Relevance:

- The study should clearly highlight what new findings it aims to add beyond previous research on smoking alternatives (e.g., PMC10126075). Specifically, clarify the clinical significance of studying THS in relation to bone healing. How does analyzing THS use potentially translate into improved clinical outcomes, such as faster healing or reduced aseptic loosening rates in the mid- or long-term?

2. Evidence Comparison:

- Previous studies have shown benefits of using anatomical models and smoking alternatives for enhancing range of motion and reducing complications. It would be beneficial to address how THS compares to these other interventions in terms of improving clinical outcomes.

Methods:

1. Ethics and IRB Approval:

- While IRB approval is stated as unnecessary due to anonymized data, the inclusion of demographic and clinical information may still necessitate ethical review. Clarify why IRB approval was not required in this case.

2. Implant Choice Justification:

- Include a rationale for choosing specific endoprostheses for the patients in this study. This helps contextualize the clinical decisions and the study's broader applicability.

Results:

1. Clarification of Control Values:

- In discussing implant deviations, specify the control values for "off-the-shelf" implants, and clarify the basis for the significant 3.05 ± 0.17 average deviation from optimal fit in various measurement planes. Explain which measurement

scale is used (e.g., millimeters).

2. Comparative Study Clarification:

- Clarify in the Methods that this is a comparative study, not just a case series. Also, provide patient counts in each subgroup to add transparency.

3. Statistical Reporting:

- Place p-values at the end of relevant sentences, not mid-sentence, for clarity and consistency.
- Ensure that all means in Tables 2 and 3 are presented accurately. For instance, in Table 3, use “mean deviation” instead of “deviation mean value,” and include the mean values for each case.

4. Age-Based Analysis:

- Without subgroup analysis, certain statements about age differences are unsupported. Specify age categories (e.g., >50, >60, >70 years), describe the data analysis method, and indicate the number of patients in each group. If multiple comparisons were conducted, outline the methods and results.

5. Data Presentation:

- Ensure that deviations are clearly defined (e.g., from standard or normal values). Additionally, clarify how many implants were analyzed per group in Figure 3, and specify the analysis type and group counts for age-based deviation comparisons.

6. Measurement Consistency:

- Provide more details on how measurement consistency was ensured. Discuss whether interclass correlation coefficients (ICC), Cohen’s kappa, Fleiss’ kappa, Pearson’s, or Spearman’s correlation coefficients were used.

Discussion:

1. Focusing on Key Findings:

- Begin the Discussion with the study’s main findings rather than restating its aim. Focus on unique results and their implications.

2. Depth and Comparison:

- Substantially expand the Discussion by comparing and analyzing results with existing studies. Highlight how your findings align or differ from prior research and their potential implications for clinical practice.

Conclusion:

1. Consistency with Abstract:

- Ensure that conclusions are consistent with the abstract. Both sections should summarize the key findings and reflect the primary implications without discrepancies.

Suggested Improvements:

1. Clarify Novelty and Clinical Relevance:

- Emphasize the unique contributions of this study compared to previous research on THS and other nicotine

alternatives. Detail how the findings might influence clinical protocols for smoking patients undergoing orthopedic surgery.

2. Methodological Precision:
- Strengthen statistical methods and subgroup analyses, especially for age-based comparisons. Ensure p-value placement is clear and consistent.

3. Enhanced Discussion Depth:
- Provide a more thorough discussion of the findings in relation to current literature, as well as potential failure mechanisms and patient outcomes. Discuss specific clinical applications based on the study's findings.

4. Align Conclusion with Abstract:
- Ensure the conclusion and abstract are well-aligned, with both reflecting the study's core findings and clinical relevance.

Overall, while the study presents clinically relevant data on the use of THS in trauma patients, addressing these points will enhance clarity, clinical impact, and scholarly contribution.