

## Peer Review File

**Article information:** <https://dx.doi.org/10.21037/fomm-21-50>

### **Reviewer A**

The manuscript “Peri-implant Strains Associated with Dental Implant Systems” describes biomechanical aspects regarding implant-support components and the strain generated in the system. It has been reviewed and the paper cannot be accepted in the present form, revision prior to acceptance must be performed.

The study is interesting and about a relevant topic. However, minor adjustments throughout the manuscript must be addressed before going through the publication process. Academic English must be improved by reviewing the manuscript and/or seeking help from professional editing services. I just added some suggestions below and marked them in yellow in the text (please see the document "FOMM-21-50-RV6-4982\_forauthors.pdf")

We wish to express our appreciation for the Reviewer’s efforts to improve our manuscript

Reply: The responses to the Reviewer’s critique are underlined

### Title

The authors may consider improving the title, e.g., “The role of Peri-implant Strains in Dental Implant Systems”.

Reply: The title was altered as per the recommendation of the Reviewer.

### Abstract

Lines 33 to 35: Please consider rewriting the sentence, e.g., “The most common implant system is composed of the crown, abutment, implant, and connecting screw. Intrinsic and extrinsic jaw movements and tooth contacting during mastication, speech, and deglutition subject all the implant system parts to complex forces.”

Reply: We agree that the suggested editing is an improvement and incorporated it.

Lines 36 and 37: Please consider changing the expression “place forces” to “enhance these forces”.

Reply: The change was made

Lines 37 to 39: Please consider rewriting the sentence, e.g., “A number of strategies have been developed seeking mechanical stability of the crown, the *raison d’etre* (with an E in the end and in italics) of the implant system, including its shape and size as well as its morphology.”

Reply: The change was made

Lines 41 and 42: What do the authors mean by “mechanical structure of the implant”? The shape, threads, size, or function?

Reply: The aspects of the mechanical structure of the implant system that are important considerations when analyzing implant and periimplant strains have been clarified.

Lines 43 to 45: Please consider rewriting the sentence, e.g., “Thus, this review particularly discusses several key biomechanical aspects of implant systems and its strains which play essential roles for the success of the rehabilitation.”

Reply: A considerable improvement. The change was made.

### Introduction

Lines 53 to 57: Please consider giving brief information about the topic, and rewriting the sentences, e.g, “One of the phenomena that occur in an oral environment with implants is the presence of strains (Please see articles from Jaafar Abduo). It occurs when there are distortions of mechanical structure, resulting from forces acting upon the implant system generated through the skeletal and muscular movement during physiological (such as mastication and speech) and parafunctional activities (such as those associated with central nervous system modulation of the activity of orofacial musculature during sleep, stress responses and dyskinesias<sup>2</sup>).<sup>1</sup> The structures that are affected by these strains are within or surrounding a dental implant system including the crown, the abutment, the screw, and the fixture structures as well as the surrounding osseous structures, Fig. 1. In view of the clinical relevance...”

Reply: The paragraph was revised as per the recommendation of the Reviewer.

### Dental Implant Systems

Line 69: Please consider changing the expression “in contact” to “in touch” or “closer”.

Reply: The words “in touch” were substituted for “in contact”.

Lines 71 and 72: How does the crown height influence the strain generated? The higher the crown, the higher the strain?

Reply: The sentence was revised to express the concepts of “torque” and “lever arm”.

Line 73: Please remove the word “see”, you did not write it for the other figures.

Reply: The word “see” was eliminated throughout the manuscript.

Line 81: Please remove the word “see”, you did not write it for the other figures.

Reply: As above.

Lines 82 and 83: Please remove the expression “in turn”, e.g., “This can cause screw loosening, which destabilizes the abutment-implant interface.”

Reply: The expression “in turn” was eliminated to make the sentence more concise.

Lines 84 to 86: Please remove the expression “in general”. Add that these horizontal forces are more deleterious to external hexagonal systems than in internal and cone-morse systems.

Reply: The words “in general” were removed and the differences between external and internal interfaces were described.

Lines 100 to 111: The authors should consider adding a new topic for this paragraph, e.g., “The role of different materials in an implant system”, and improve the description.

Reply: Since this paragraph falls under the category of dental implant systems, rather than a new subtitle, a revised first sentence in this paragraph was introduced.

Lines 112 to 131: The authors should consider adding a new topic for this paragraph, e.g., “Surgical and bone considerations in an implant system”, and divide the paragraph into more paragraphs.

Reply: This paragraph was divided into several more paragraphs as per the suggestion of the Reviewer.

Line 162: Reference is lacking after the word “observations”.

Reply: A reference was added.

Lines 167 and 168: This should be the first phrase of your Dental Implant Systems topic, and then go straight to the point, e.g., “After the implant placement, it should be mechanically stabilized (primary stability) by virtue...”

Reply: The Reviewer’s observation is well taken and the introductory sentence was eliminated.

Line 221: Please remove the word “see”.

Reply: As before.

Lines 247 to 256: Please join this paragraph with the one in lines 112 to 131.

Reply: This paragraph has connection with both the “thread design” and the “wear and tear” themes. However the authors prefer to keep this paragraph with the “wear and tear” discussion as osseous thickness would seem more related to bone thickness and potential fatigue.

Line 291: In this paragraph, the authors can cite implant surface treatments.

Reply: This was included with a reference. Appropriate.

Line 304: Please review the references, there are some of them which are not in the Vancouver style.

Reply: The references were carefully checked

Figure Legend

Lines 448 and 449: Please consider rewriting the sentence, e.g., “Figure 1. Components (or Parts or Structures) of a dental implant system in a single unit restoration.”

Reply: Clearer. Thanks.

Lines 452 and 453: Please consider rewriting the sentence, e.g., “Figure 2. Teeth replacement. A) Mandibular left central incisor replacement in cast model. B) Mandibular left central incisor replacement in the oral cavity. C) Four-unit maxillary replacement in cast model. D) Four-unit maxillary replacement in the oral cavity.”

Reply: This figure caption was rewritten.

Line 457: Please consider using “diagram” or “representative figure” instead of “depiction”. Put figure B on the right side of figure A, not before it (left side).

Reply: The term “diagram” was substituted.

Line 458: Please first describe the term, e.g., maximum intercuspation, and then add the acronym (MIP), if you are going to repeat the term later. If not, just write the complete term.

Reply: The figure caption was rewritten and the full term used.

Line 463: More destructive for what part of the system? The whole system?

Reply: The figure caption was rewritten to clarify the authors’ intentions and the relationship between crown height and damage to crestal bone explained

Lines 467 and 468: Use this phrase in the sentence in lines 71 and 72.

Reply: The term “cuspal angle” was included in lines 71-72.

Line 471: Please remove the expression “In this figure”, e.g., “Transmission of forces through the dental implant system. Horizontal...”

Reply: The expression “in this figure” was removed.

Line 447: The authors should mention that it represents an external hexagonal implant system complex.

Reply: This information was included in the figure caption.

Line 484: If you start the sentence regarding the external connection, please put the figure of the external connection on the left side of the figure (“first”), and then the internal connection.

Reply: The figure caption was revised and the internal connection figure mentioned first. Thank you for this observation.