**Author’s response to reviews**

**Title:** Can Body Mass Index influence the fracture zone in the fifth metatarsal base? A retrospective review

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RESPONSE TO REVIEWERS

**REVIEWER #2**

Major

* I appreciate the response regarding my initial query of the use of 'epidemiological' in the title, although I still believe that this may be somewhat overstating the type of study that is presented. This is in essence a retrospective review of a small sample with three types of fractures. Given the absence of a control, and the small numbers in each group (only 12 people were obese), a reader could erroneously conclude that elevated BMI increases the risk of one fracture.
The Authors acknowledge the Reviewer’s point and understand the basis of his critique. This was also pointed out by the handling Editor. In light of this, the Authors decided to change the title from “The relationship between Body Mass Index and the localization of fifth metatarsal base fracture: an epidemiological study” to “The relationship between Body Mass Index and the localization of fifth metatarsal base fracture: a retrospective review”.

* I agree that a binary logistic regression would not be suitable for this study, but could a multinomial logistic regression be performed?

From a merely statistical perspective, a multinomial logistic regression could be performed in our study. However, this approach was avoided due to the small total sample size (149 patients). Also, the percentage of obese patients and those who suffered a fracture in zone 3 were also relatively small (12 out of 149 and 19 out of 149, respectively). It was then concluded that the best approach was to use ANOVA test in order to assess if a statistically significant difference existed between groups. The Authors agree that a multinomial logistic regression model could have been used if the population sample had been larger.

* It may be best to temper the conclusion. Given the design, it may be overstating the results to say that the results of this study 'show that BMI influences the zone of fracture'. This implies a causative relationship. This is particularly important to be clear with the reader as the inclusion criteria (requiring a specific type of injury) and the self-report height and weight (which is frequently incorrect) may limit the generalisability of the findings.

The Authors acknowledge the Reviewer’s point and understand the basis of his critique. The reported sentence was therefore modified taking into account the Reviewer’s comment.

* The first paragraph of the discussion appears to include a variant of what was reported in the background regarding the zone fractures. Is it necessary?

This paragraph was removed taking into account the Reviewer’s comment.
* The categories for BMI need a minor edit. Overweight should be 25.0 - 29.9, not 24.9 and 29.9.

This change was implemented according to the Reviewer’s suggestion.

* The standard deviation initialism needs defining in the methods section, prior to use in the results.

This change was implemented according to the Reviewer’s suggestion.

* Unit of measure should come after the SD value, not between the mean and SD values.

This change was implemented according to the Reviewer’s suggestion.

* The limitation section - final sentence, 'Lastly, and lastly, results…. ' needs correcting

This sentence was corrected as per Reviewer’s suggestion.

* In the limitation section - it is difficult to understand why treating BMI as a continuous variable overcomes the bias of incorrect weight and height being provided by patients. Are you able to explain this further?

The Authors acknowledge the Editor’s point and understand the basis of his critique. This part was removed from the limitation section and the limitation of a self-report bias was acknowledged fully.

Additional comments from handling editor:

This is reported as a retrospective analysis so it is not clear how “the Authors made a conscious effort to include only patients who reported a “twisting” movement in the process.” Consideration of the limitation of analysis of retrospective data is needed.
The Authors acknowledge the Editor’s point and understand the basis of his critique. The Authors re-introduced the previously-erased part about the distinction between the different mechanisms of injury and acknowledged this in the study limitations.

Line 94 – your statistical analysis does not allow you to determine if a relationship exists, or not. Please review.

This issue was amended as per Reviewer’s suggestion.

Line 137 – you refer to a statistical correlation? What is this and how is it supported by your results?

This issue was amended as per Reviewer’s suggestion.

Review spelling throughout. For example, “analized” (line 162)

Spelling was reviewed throughout as per Editor’s suggestion.

Given that ethical approval was not indicated, please add comment on what safeguards are in place to protect the data.

Patients admitted to our Accident &amp; Emergency department are required to answer a questionnaire and sign a form concerning personal data protection. Within this questionnaire, there is a specific question regarding consent to access personal data for research purposes. Therefore, only patients who explicitly gave their consent could be accessed on the electronic health record. Further information can be found on the following page (Website in Italian): https://www.policlinicoumberto1.it/il-policlinico/protezione-dati/chi-pu%C3%B2-trattare-i-miei-dati-registrati-in-forma-elettronica.aspx