Response to Reviewer Comments

Reviewer: 1

We would like to thank the reviewer for his helpful comments. Please see the responses to your questions below.

1) Line 163: Change chi-square to chi-squared. Similar in Table 1. Please check elsewhere.
   As suggested, we have replaced chi-square by chi-squared on line 167, in Table 1 and in Appendix 2.

2) In the methods section - when referring to your Poisson models, I would say that you are estimating Relative Risks and 95% CI's.
   On lines 169-170, we have modified the sentence as follows: “To evaluate changes in fracture risk and pattern before and after the index date, crude and adjusted conditional Poisson regression models were used to estimate relative risks and their 95% confidence intervals (CIs).

3) Please be consistent with the reporting of p-values. For example in the text p<0.0001 is reported compared with p<0.001 in the table. Perhaps the BMJ has standard guidance on this.
   We have paid attention to report p-values in the same way throughout the manuscript, with a maximum of 3 decimal places as stated in the BMJ guidelines.

4) Line 201: a p-value is reported as p<0.0001 - from the way this is written, it looks like this is the difference in fracture rates between the three group but there is no p-value in Table 2, it's left as ‘----’.
   We thank the reviewer for pointing that out. We realized that this was a mistake in the text, on lines 204 and 208. For clarity, we decided to present only the p-value for the adjusted fracture risk between groups, as presented in Table 2.

5) The use of the way p-values is reported in Table 2 is confusing. The non-obese group is used as a reference and then one p-value is reported. There should be a related p-value for both the obese and bariatric groups. From the CI's I can see they are both significant and probably have the same p-value as reported, but this doesn't necessarily have to be the case - same problem in Table 4, here there may well be a difference where you report exact p-values. I would also present the RR and CI's in the text as well as the p-values.
   In our statistical analysis, the variable corresponding to the group is a categorical variable with three levels. To simplify the presentation of our results, we decided to present only the p-value of type III (global p-value) in Tables 2 and 4. A note under the tables has been added to clarify the meaning of this p-value. The CIs are presented in the Tables and can be used as guidance of the significance of the RR for each group. The RRs and CIs have also been added in the text.

6) From Table 2: the period after the index date results are not described in the text as presented in the Table, rather a new result is presented (data not shown in tables) - I found this confusing.
   We agree with the reviewer that this was confusing. For clarity, we split the sentence in two on lines 210-211.

7) Table 3 - for clarity I would also label as the pre- and post- surgery period to be consistent with the text. Same for other tables. While it's kind of obvious, for clarity I would also label 'central fractures' as you refer to in the text.
   In Tables 2 to 5, we changed the labels as “period before surgery and period after surgery” to be consistent with the text. Moreover, on line 232, we chose to change the term “central fractures” for “clinical spine, femur, hip and pelvic fractures” to be consistent with the table. Indeed, we decided to remove the term “central fractures” in the manuscript, as this is not standard nomenclature.

8) Line 215, I'm not sure I like the term 'increased' or 'gradient' - these terms are usually used to describe a trend - I think you are merely pointing out that the proportion of fracture rates are 'lower' or 'higher' on average.
   We changed the sentence according to the reviewer’s comment on line 231. We also changed the
9) Line 223: You have switched. In line 222 you talk about higher risk in bariatric group and obese group first then on line 223 you talk about risk reduction in obese THEN bariatric group - please be consistent in the way you report. We have corrected this, thank you.

10) Line 226: whilst reported correctly, I'm not sure why you switch from reporting the RR and CI for one comparison and then the % difference for the others.
We have reported the RR and CI everywhere in the text.

11) I am confused with Figure 2 - what is presented here that is different from Table 4 results. Based on the numbers, it's not obvious the message is the same.
Data presented in Table 4 and in Figure 2 are different. Table 4 presents the relative risks of fracture by fracture site between groups for the periods before and after surgery (the bariatric and the obese groups are compared with the non-obese group). On the other hand, figure 2 displays the changes in fracture risk after vs. before surgery within each group (each group compares to itself). We realize that the titles of the tables and figure 2 were not clear so we decided to reformulate them.

12) Line: 253. 'surgery groups and all significantly higher than the non-obese group' Significant in a statistical sense? How do you know? Same when you refer to adjusted fracture risk being similar between surgical groups (pre-surgery) - are they that similar? Most seem closer to the obese group but AGP seems stand-alone.
We agree with the reviewer. We only compared bariatric surgery types with the non-obese group, and not among themselves. We changed the sentence on lines 286-287 to: “Before surgery, adjusted fracture risks in the surgery groups were all significantly higher than in the non-obese group, except for RYGB (Table 5).”