Author's response to reviews

Title: Tibia shaft fractures: costly burden of nonunions

Authors:

Evgeniya N Antonova (jennyrator@gmail.com)
T Kim Le (tkimle@hotmail.com)
Russel T Burge (burge_russel_thomas@lilly.com)
John Mershon (mersh13@att.net)

Version: 3 Date: 26 September 2012

Author's response to reviews:

Dear editors,

Please find the reviewed manuscript attached. We have addressed reviewer comments in the following way:

Reviewer's report (#1)
Title: Tibia shaft fractures: costly burden of nonunions
Version: 2 Date: 19 August 2012
Reviewer: Peter Giannoudis
Reviewer's report:
Major Revisions
This is an intersting study. However, the data presented require some clarifications:

1. Were all non-union patients re-operated?
Author response: Most of the nonunion patients were re-operated. We added Figure 2 that describes surgical procedures that were performed on patients based on their nonunion status.

2. Did all non-union patients unite?
Author response: We don't know whether all nonunion patients experienced a union or not. Unfortunately, the claims data do not detail such information.

3. What does the in hospital cost calculation include? Theatre sessions?
Author response: the hospital costs included all costs associated with the hospital stay (the surgery and recovery).

4. What was the detailed theatre costs?
Author response: Unfortunately, we were unable to detail these costs. However, we were able to detail the frequency of different types of post-fracture surgical
procedures by the nonunion status. The results demonstrated that nonunion cases required significantly more surgical resources than cases without nonunion. Because costs vary from one healthcare setting to another, we feel that frequency of procedures is a more telling piece of evidence than costs (because all healthcare settings can relate to the former, but may feel that the latter may be not representative of them).

5. How many interventions did the patients undergo?

Unless we know the extent and the success of the intervention how can we provide an accurate calculation of the costs implications?

Author response: We have detailed the scope of additional procedures in Figure 2, where we have listed surgical procedures post-fracture.

6. Were any BMPs used for treatment?

Author response: This is an interesting question. Unfortunately, we have been unable to determine this. We will note it as a future research question.

7. What percentage?

Author response: Unfortunately, we have been unable to determine this.

8. Was the success the same with and without out BMP’s?

Author response: This is an interesting question. Unfortunately, we have been unable to determine this.

Minor:

Abstract: Tibia fracture patterns are different in men compared with women: In the results there is no data to include this conclusion.

Author response: the between-sexes differences are discussed in section “Tibia fracture patient characteristics: age and sex” (lines 134-140) of results and in the discussion section (lines 211-215).

Level of interest: An article whose findings are important to those with closely related research interests

Quality of written English: Acceptable

Statistical review: Yes, and I have assessed the statistics in my report.

Declaration of competing interests:

'I declare that I have no competing interests’

Reviewer's report (# 2)

Title: Tibia shaft fractures: costly burden of nonunions

Version: 2 Date: 4 September 2012

Reviewer: Glinda Cooper
Reviewer's report:

Major Compulsory Revision

Dear Dr. Cooper, Thank you very much for reviewing our manuscript. We greatly appreciate your insightful comments and recommendations. Please see our responses below.

Table 1 shows a much higher rate of second fractures among patients with nonunion fractures, but this point was not mentioned when describing the comparison of nonunion and union patients, nor was it addressed in the analysis or discussion. (The data are included in “Figure 3”, but Figure 3 is not referred to in the paper). This is a major oversight that needs to be corrected in a revision, and could have a big impact on the interpretation and use of the results. How much of the difference in costs (or strong opioid use) is mediated through this difference in secondary fractures? Could this be an important, and easily recognized, indicator of severity/risk of nonunion?

Author response: Indeed, table 1 and figure 3 show that patients with non-union were more likely to experience multiple fractures during the study period than their counterparts without non-union. We have fixed our omission and noted this fact in the “Results” section under “Tibia fracture patient characteristics by nonunion status”. We have also discussed this issue in the “Discussion” section. Our future plans include conducting multivariable analyses, and we are planning to investigate the correlation between nonunions, multiple fractures, and opioid use.

Other Issues to Address

The authors interpretation of Figure 2 is not actually describing what Figure 2 represents. The age distribution of fractures in a population (e.g., in men) reflects the rate of fractures at a given age and the underlying age distribution of the population. That is, if you have a relatively young population, you're going to see more fractures at young ages than if the same age-specific rates are applied to an older population – the higher proportion of fractures in older women compared with older men may reflect, in part, a greater proportion of women living to older ages. You need to present the prevalence rates by age if you want to make comments about the age-pattern in the rates.

Author response: We have modified the paragraphs that talk about sex differences.

Also, the last sentence in the
paragraph describing “Tibia fracture patient characteristics: age and sex” is not accurate- the p-value (0.50) is for a comparison of union vs nonunion fractures by sex, NOT for a comparison of prevalence of tibia shaft fractures by sex. It would be better to replace Figure 2 with a more accurate description of the data that is in Table 1.

Author response: We have removed this statement and the figure.

It would be more informative to present the comparison between nonunion and union status in relation to other variables, such as open or closed fractures, by reporting the odds ratio and 95% confidence intervals rather than a p-value.

Author response: We don’t have 95%CI’s available, unfortunately. We will consider this recommendation for future publications.

Introduction - can you define and/or give references for "a clinically reasonable time period" (with respect to healing failure that would lead to secondary surgical intervention)

Author response: We have provided a statement with references on clinically reasonable time period for fracture healing (lines 60-61).

Last paragraph of Results section is not needed.

Author response: deleted

We deleted this paragraph.

Figure 1 is not needed. Table 4 can be reformatted – mean, SD and median do not need to be on 3 separate lines.

Author response: We moved Figure 1 to online supplemental materials as it may be important to some readers who have a special interest in methodology. We decided to keep Table 4 the way it is to make it easier for the reader to read the statistics.

Level of interest: An article whose findings are important to those with closely related research interests

Quality of written English: Acceptable

Statistical review: Yes, and I have assessed the statistics in my report.

Declaration of competing interests:
I declare that I have no competing interests.