Reviewer’s report

Title: Incidence of distal radius fracture surgery in Finns aged 50 years or more between 1998 and 2016 - too many patients are yet operated on?

Version: 1 Date: 06 Jan 2018

Reviewer: Stuart Aitken

Reviewer’s report:

Thank you for the opportunity to review this paper for BMC Musculoskeletal Disorders. I very much enjoyed reading it. It is well written, appropriately structured and it was clear to me that a great amount of time and effort has been spent in putting together the final submitted draft.

I am recommending that the paper be accepted, but with some revisions as to how the results are presented.

The authors have chosen to investigate the changing incidence of distal radius fracture (DRF) surgery at a population level, by identifying all cases occurring in patients aged 50 years or more and recorded in the Finnish NHDR between 1998 and 2016 (a nineteen-year period). They have discovered an approximately 50% increase in the incidence of DRF surgery during this time, with ORIF largely replacing Ex-fix.

I think the subject matter is interesting, very relevant (especially given the most recent evidence for the surgical management of DRFs), and adds knowledge. It falls within the scope of BMC Musculoskeletal Disorders Journal.

As a general point, but an important and fundamental one, the authors have chosen the entire Finnish population aged 50 yrs or more as their denominator. The obvious choice would be to have surgically treated DRFs as the numerator, and have all DRFs (op and non-op) as the denominator. They do not have any data on Finnish DRF incidence, which is a significant weakness. I personally do not think this takes away from the main messages from the paper (after all, they do have very powerful national level numerator data, and many of the overall incidence changes are quite dramatic), but I think it does mean that smaller year-to-year fluctuations in the presented incidence rates are much less meaningful. They may simply reflect a greater or lesser number of DRFs occurring in any given year.

My suggestions:

Layout and format

I would not change. The paper is beautifully put together, well structured. This made the process of reviewing the paper much easier. The first author is to be congratulated on his grasp of the
English language and grammatical accuracy. I have worked with many English speaking surgeons who might learn something from him.

Title page

I think the title should be changed. "Fifty-year-old or older" might be better presented as "Finns aged 50 years or more". "Too many elderly patients are yet operated on?". Does elderly refer to all those 50+, or the oldest age group? Would be better revised.

Abstract

The study purpose in the abstract (mentioning the elderly sub-group) does not match the purpose in the manuscript (no mention of elderly, just of all older Finns). They should match perfectly, as the stated aim is very important.

Otherwise, the abstract is concise and reflects the current manuscript content. It may need changed slightly after the authors amend the results and discussion.

Introduction

Well written. They have chosen excellent references, but paragraph 3 should be amended. The enthusiasm with which volar plating was adopted was not based upon the evidence that we now have. All of the good functional outcome references that the authors present in this paper were written in 2011 or later, and this was AFTER the identified surge in the surgical treatment (especially volar plating) of DRFs.

It might be better to suggest that 'the trend towards ORIF occurred internationally despite a lack of strong evidence to support its use. Recent high quality studies have shown that locked volar plating does not yield superior…… etc etc'.

The authors need to be very clear about their stated aims. They currently state that they want to investigate whether recent good evidence has had an effect on the incidence of DRF surgery. I would contend that they are examining 1998 to 2016, and their meaningful references (many from 2013 and 2014) have been published too recently to have much impact on surgical trends.

Given the content of the results and discussion, I think their stated aims are:

1. To examine recent trends in the incidence of DRF surgery in Finns aged 50 yrs or more, and assess to what extent these trends reflect current best evidence.

2. To examine changes in the frequency of the various types of surgical treatments performed for DRFs between 1998 and 2016
Methods

I agree entirely with the statement regarding informed consent and ethical approval.

Should line 97 read 'three groups' rather than four?

I also agree with the statement regarding inferential statistics. They are not required when the population of interest is an entire population, rather than a regional sample.

I have previously mentioned my opinion on their choice of denominator.

Results

This section is well written but I think some restructuring would improve its impact.

Firstly, as a reader of this article, I am interested to know the size of the population studied (Finns aged 50 yrs or more) and the proportion of the entire Finnish population that these individuals represent. How has the size of the population at risk changed in nineteen years?

Secondly, from reading through this section I think the authors have two main findings that deserve emphasis. After all, they have alluded to these two points in their introductory section where they have quoted important references. A decline in surgery incidence in the elderly, and a decline in the use of volar plating compared with percutaneous methods of fixation.

1. Changes in the age-related DRF surgery incidence (all surgery types). With particular reference to their quoted papers 11 and 19, I am interested to learn if the incidence of DRF surgery has actually declined in "elderly" patients (the authors might use the 70+ age group as an example). According to best evidence, we should be starting to see a decline in incidence in the elderly. In its current form the paper does not have an appropriate graph to display this information. I suggest inserting an additional Figure (x = year, y = incidence) with ALL DRF surgery types, arranged by age group.

2. Changes in the frequency of the various surgical procedures. They have already recorded this visually in their current Figure 1. Figures 2 and 3 complement this.

Discussion

Paragraph 1. As stated, I think there are 2 main findings.

P2. Sentence 2. The change occurred prior to your stated references (11 and 19). Please revise this statement.

Line 161. Surgical activity might be better put as 'surgical management'.
P5. As mentioned above, I think the authors need to place greater emphasis on the lack of DRF incidence data as an appropriate denominator for this study. Accordingly, you cannot make a statement such as the sentence at line 177. Suggest "Thus, we propose that the more pronounced incidence changes observed in the present study are unlikely to be explained by variations in DRF incidence alone. Smaller fluctuations in DRF surgery incidence, such as the 2008 peak or the decline after 2013, may well be related to the number of DRFs sustained by the population."

The final sentence of this section might benefit from some addition:

"According to our results, current Finnish practice patterns in treating DRFs do not reflect the best available and most recent evidence. This should prompt a revision of the current Finnish Clinical Practice Guidelines on the treatment of DRFs."

Figures

As stated, I would add a Figure.

I would change the y-axis titles to "n / 100,000 population" to emphasise to the reader that the denominator is not all patients with DRFs, but is population based.

Once again, many thanks for allowing me to review. I would be very happy to review again after the appropriate edits have been completed.

S Aitken

Are the methods appropriate and well described?
If not, please specify what is required in your comments to the authors.

Yes

Does the work include the necessary controls?
If not, please specify which controls are required in your comments to the authors.

Unable to assess

Are the conclusions drawn adequately supported by the data shown?
If not, please explain in your comments to the authors.

Yes

Are you able to assess any statistics in the manuscript or would you recommend an additional statistical review?
If an additional statistical review is recommended, please specify what aspects require further assessment in your comments to the editors.

I am able to assess the statistics

**Quality of written English**
Please indicate the quality of language in the manuscript:

Acceptable

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