Reviewer's report

Title: Mortality and Complication of Hip Fracture in Young Adults: A Nationwide Population-based Cohort Study

Version: 2 Date: 3 July 2014

Reviewer: Jacqueline Center

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Overall comments
The study identifies a large number of young adults with hip fractures from the Taiwan National Health Insurance database and examines mortality rates and complication rates following the different fracture types. They identify several risk factors for mortality and complication. The methods and results are often not specific enough which makes it hard to follow exactly what has been done. The authors also need to make clearer what is unique in this study compared with previous data in this area and present it in a more interesting way to highlight what is particularly important.

Major compulsory revisions
Abstract- p2 “Charlson” is misspelled throughout the text. The English is also incorrect in many places throughout the manuscript. In particular, one doesn’t say “larger number of Charlson comorbidity index”. A better phrase would be “higher or greater Charlson comorbidity index”.

P2 It is not clear what difference the authors mean when they use the terms implant and arthroplasty? Please define these in the manuscript.

Were all the hip fractures traumatic? Or were some low trauma osteoporotic fractures? This should be clarified.

Background-p3 The authors state the aim of the study was to assess long term complications but in fact they have assessed short and long term complications.

Methods p5 When was the end of the study? Please specify. What was the loss to follow up rate? How was this determined and how did you know when loss to follow-up occurred?

P5 Outcome measures discusses the 90 day outcomes but not longer term outcomes. This becomes confusing as to what is going to be examined eg 5 and 10 yr complication free rate. Please detail these also in the methods.

P6 Subjects who died within 90 days couldn’t have suffered a complication and are different from those alive without complication yet they are treated in the same way. Death could be considered a complication. Please consider doing a competing risk analysis with death as the competing risk.

P6 In the multivariate (not multiple) analyses, were comorbidities analysed as separate individual comorbidities or as a Charlson score? Please also define
type of operation.

Results- Where are the 90 day results that were detailed in the methods?
P7 When discussing risk factors for complication rates (and for survival rates) was this for the overall 10 year follow up or was this for 90 days. The results presented are confusing in this respect.

Did cervical fracture result in more hemiarthroplasties? In other words was the effect on complication free rate due to the type of fracture or the type of operation? Are they collinear?
P8 Please define terms “implants removed” vs “implants converted to arthroplasty or revision arthroplasty”. How can implants be removed without being converted to arthroplasty or revision arthroplasty?

What risk factors caused removal of implants versus other complications? With the large numbers you have, you could explore some more interesting associations.

Please state numbers of people that were available at different follow up times (this could be done at the bottom of the figures).

Discussion-p9 the same risk factors are stated for both survival and complication rate but this is not the case. It would be easier for the reader to group those risk factors that are the same and those that are different.

The overall discussion is quite tedious and restating findings in the literature. These should be grouped where similar and comparisons drawn with the present study detailing differences and discussing why there may be differences.

Table 1 Please include a column indicating significant differences in risk factors between cervical and trochanteric fractures.

Table 3 please specify what the adjusted survival analyses were adjusted for.

Please have the text reviewed by a native English speaker prior to resubmission for grammatical and spelling errors.

**Level of interest:** An article of limited interest

**Quality of written English:** Not suitable for publication unless extensively edited

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

**Declaration of competing interests:**

I declare that I have no competing interests.