Reviewer's report

Title: Radiographic Union Score for Hip Substantially Improves Agreement Between Surgeons and Radiologists

Version: 1 Date: 4 December 2012

Reviewer: Tormenta Sandro

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GENERAL COMMENTS AND MAJOR COMPULSORY REVISIONS

The article treats a topic of great interest and clinical utility. The data is well structured and statistically correct, even if the choice of involving orthopaedics in the evaluation of x-rays remains prerogative of North American countries; in Europe and other countries only radiologists could be recruited for a study like this.

There are some discretionary and minor essential revisions, some of which deserve a revaluation of the Authors.

The first major observation concerns the type of lateral radiographic view of the hip performed in the study. The term “lateral” could refer to two different radiographic views and therefore, though it may seem obvious, the correct type must be specified. The attached images are not self-explanatory, also because they are slightly different, even in the same patient. I believe that we are talking about “cross-table lateral view”, but in the attached x-ray images we see an overlap between the neck and the greater trochanter, ie a sign of incorrect projection. If, in the study, there were problems in obtaining correct and strictly comparable radiographs this should have been specified considering that the outcome of the study could be affected (see also Page 7, line 3: “and, if applicable, commented on the quality of the radiographs for each case”.

The most important major compulsory issue concerns the evaluation of the results. The underlying problem is that a validated reference standard for the assessment methods of fracture healing does not really exist. Thus, the primary endpoint of a study on this topic should be the reliability and efficacy of the method, leaving as secondary endpoints its repeatability and applicability among various specialists. Also because an assessment could be highly reproducible, even if wrong. For this reason the fact that in this study there is no agreement among specialists in the evaluation of x-rays with date blinded in time should be treated and discussed in the article in a more comprehensive and detailed manner. If a method does not provide, in blinded mode, a statistically significant consensus among specialists already familiar with it, you have to question the effectiveness of the method of evaluation, especially if this has not yet been officially validated. Which radiographs determined less consensus (the earliest after surgery?) is not described in the article. Whether there is a difference between the evaluation of radiologists or orthopedics is not described. There is
no correlation with clinical data collected (although it was not among the objectives of the article).

The Authors state that the consensus achieved on “unblinded” radiographs is significant because it reflects the real clinical practice. However knowing the date of radiographs could certainly also affect the assessment of radiological findings. This is even more likely if you also add the possibility to clinically evaluate the fractured patient. I would not be surprised if the overall impression of fracture healing alone was able to reach an almost perfect consensus if combined with the knowledge of the dates of the radiographs and the clinical evaluation of patients. In fact, in the article the “unblinded” overall impression of healing has ICC values similar to those of “blinded” RUSH method. (Fig. 4).

In conclusion, I believe that it is essential, before publication, to make some corrections in the abstract, in the results and conclusions. In particular the problems related to the lack of “blinded” agreement should be specified, the statistical evaluation of this aspect expanded and the causes of this problem speculated upon. However, it is advisable to make a more clear statement in the article about the need for further studies on the effectiveness of the RUSH method, comparing it also in blinded mode to other methods of assessment of fracture healing.

MINOR ESSENTIAL REVISIONS

PAGE 2
Line 20: change “In all circumstances…” with “In all cases…”

PAGE 4
Line 3: change “informal” with “unofficial”

PAGE 5
Line 2: change the sentences: “Each case was represented by anteroposterior and lateral radiographic views of a hip fracture immediately post-operatively for a baseline assessment, in addition to a minimum of three to a maximum of five subsequent follow-up visits.” to: “Each case was represented by a series of anteroposterior and lateral radiographic views of a hip fracture. One performed immediately after surgery, for a baseline assessment, and three to five others just before follow-up visits”.

Line 10: after “…an earlier study”, it is necessary to put the number of reference of this article.

PAGE 12
Last line: change “indications” with “signs”

PAGE 13
First line: change “difficulty” with “problems”
Line 9: change “…as weightbearing” with “…as weightbearing pain”

PAGE 14
Line 1: change “with” with “together with”.

DISCRETIONARY REVISIONS

PAGE 2
Line 3: I would suggest to change the sentence “With little existing literature on the reliability of hip fracture healing agreement, this study” to: “With little existing literature regarding reliable consensus on hip fracture healing, this study….”
Line 7: I would suggest to change the sentence “…to determine possible improvement in agreement…” to: “…to determine the possibility of improving agreement…”
Line 14: I would suggest to change the sentence “Data were compared to data…” to: “Data was compared to the findings ”.

PAGE 4
Line 1: I would suggest to change “centrality” with “significance” or “importance”
Line 6: I would suggest to change the sentence “…of what assessment tool is best to use along with the subjective…” to: “…of what is the best assessment tool considering the subjective…”
Last Line (and Line 1 of page 5): I would suggest to change the sentence “…assessed 100 operatively treated femoral neck and 100 intertrochanteric fractures for fracture healing…” to: “…assessed for fracture healing 100 surgically treated femoral neck and 100 intertrochanteric fractures…”.

PAGE 5
Line 19: I would suggest to change “generalizability” with “applicability”.

PAGE 6
Line 4: I would suggest to change the sentence “Eligible cases of hip fractures had at least two radiographic views available for immediate post-operative images and images available for at least three to five subsequent follow-up visits.” to: ” Eligible cases of hip fractures had immediate post-operative images and images available for at least three to five subsequent follow-up visits, each consisting of at least two radiographic views.”

PAGE 11
Line 1: I would suggest to change “generalizability” with “applicability”

PAGE 12
Line 2: I would suggest to change “conceivably” with “potentially”

Page 13
Line 7: I would suggest to change the sentence “…a diversity of opinion in regards to how to best determine the healing status of a fracture.” to: ”…a diversity of opinion regarding the best method to determine the healing status of a fracture.”.

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

**Quality of written English:** Acceptable

**Statistical review:** No, the manuscript does not need to be seen by a statistician.

**Declaration of competing interests:**

I declare that I have no competing interests