Reviewer’s report

Title: Hip stability after total hip arthroplasty predicted by intraoperative stability test and range of motion: a cross-sectional study

Version: 1 Date: 30 Jul 2018

Reviewer: Volker Otten

Reviewer's report:

General Comments and major compulsory revisions

The article covers a topic of great interest and clinical importance. The text is well structured and easy to follow.

There are some discretionary and minor essential revisions.

There are three major points which deserve a reevaluation of the Authors.

At first the measurement of internal rotation itself. In the M&M section it is stated that internal rotation was measured "similar to Sultan et al" and even in the article that the text is referring to the description of the measurement is relatively vague. Measurement of internal rotation as described can be challenging. Did the authors perform any double examination of the measurements to determine the repeatability of this test or any accuracy test? If so for this study or in any earlier study, this should be mentioned otherwise this should be discussed in the discussion section. In the discussion section, line 168/169 it is stated that "A navigation system was used to measure intraoperative ROM accurately." This sentence is confusing in the context of the M&M section where no use of a navigation system is mentioned. This should be clarified.

The second major point regards the statistic used and the presentation of the results in table 1. The parametric unpaired t-test is used to compare continuous variables, especially the intraoperative internal rotation possible before dislocation. It should be tested if the results of internal rotation are normal distributed in both groups, and if not, a non-parametric test should be preferred. Furthermore, I would suggest to use mean values (range) for internal rotation in table 1.

The third major point is the chosen point from the ROC curve. As a clinician it is probably most important to have a per operative test with high sensitivity for the risk of later dislocation. The authors picket a cut-off point with a very specificity but with a relatively low sensitivity. Fig 2 indicates that it is possible to pick a cut-off point with a sensitivity of 0.8 and still have a sensitivity of about 0.65. In my opinion this would be even more useful in clinical work.
Minor essential revisions

In the "Methods" section, line 58 "... without posterior capsule repair" It should also be mentioned the neither the external rotators are repaired. This information is given in the discussion section but should also appear here.

In the "data collection" section, line 80 it should be clarified if only clinic and hospital records from one hospital or from the hole regions were used. This might be important in case any patients have been treated for dislocation in other hospitals.

In table 2 the reference angle for IR should be $51^\circ$ instead of $55^\circ$ according to the text in the result section.

In figure 2 on the y-axis it should show 0.4 and 0.6 instead of 4 and 6.

Discretionary revisions

I would suggest to use only one decimal in all numbers besides p-values.

In the results section line 105/106, the sentence "In the patients without dislocation … compared with patients who had a dislocation." does not add any information and is rather confusing. I would suggest to delete this hole sentence.

A boxplot with measured angles of internal rotation for the group without dislocation and the group with dislocation might be helpful to visualize the variety of measured IR angles in both groups.
Are the methods appropriate and well described?
If not, please specify what is required in your comments to the authors.

No

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

Yes

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

No

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 recommend additional statistical review

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