Author's response to reviews

Title: Digital Anatomical Measurements of Safe Screw Placement at Superior Border of the Arcuate Line for Acetabular Fractures

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Author's response to reviews: see over
Reviewer's report

Title: Digital Anatomical Measurements of Safe Screw Placement at Superior Border of the Arcuate Line for Acetabular Fractures

Version: 3 Date: 2 December 2014

Reviewer: Christoph Emanuel Gonser

Reviewer's report:

First of all, the paper itself is promising and has some potential, however, there are major issues which need to be addressed.

In General, the paper would need thorough corrections by a native speaker, sometimes it can be only guessed what the authors meant. Moreover there are many orthographic mistakes which should be corrected before submission!

1. Abstract:

The purpose is not completely clear or not easy to understand, splitting up the sentence into two might help.

Response: The purpose has been modified.

Line 36: “adults eliminated pelvic diseases”. Do you mean patients without pelvic injury? Another way to put it would probably be “98 uninjured pelvises of Chinese adults were examined”

Response: corrected.

Line 38: “and. Five”: remove the period

Response: corrected.

Lines 38 - 42: It is not clear how the angles alpha and beta are defined

Response: corrected.

Lines 41 – 42: How are the safe screw depths or lengths defined?

Response: corrected.

Line 45: “The maximumscrew” replace with “The maximum screw”

Response: corrected.

2. Introduction

As mentioned above, thorough correction by a native speaker will be necessary throughout the paper.

Line 80: “hip joint for the articular surface could not be observed directly” might
be replace with “penetrate the hip joint since the articular surfaces cannot be observed directly during the procedure.”

Response: modified.

Lines 81 – 85: “This can result to”: change “to” to “in”; “in further” change to “in the long run”;
“which increase …”: split up the sentence, e.g. “these techniques however increase operation time and iatrogenic trauma”

Response: corrected.

Lines 87 – 97: This section is very hard to understand; more references would be needed especially considering previous anatomical research. Moreover, there are just too many orthographic mistakes.

Response: This section is some anatomical backgrounds of acetabulum. We realized that this section was actually not strongly related to the manuscript’s purpose. So we decided to remove this section.

Lines 97 – 106: There are some studies which have been conducted in live patients and there are some studies comprising a higher number of samples.

Response: The studies conducted in live patients or with higher number of samples are not mainly focusing on the accuracy of the screw placement at acetabular area during open reduction operation.

Lines 111 – 112: How exactly did the application of engineering design software help with warranting the objectivity?

Response: All the supplementary lines and planes were constructed by software. All the angles and lengths were measured by software. These applications helped with warranting the objectivity.

3. Patients and methods

As mentioned above, due to the use of the English language, some parts of the
paper are difficult to understand, thorough correction by a native speaker would help.

Please give the number of the ethics committee and explain exactly why the CT scans have been performed, especially in regard to the high radiation dose each patient was submitted to.

Response: The ethics committee number is 2011CB711005. All patients in this study were outpatients with varicose vein of lower limb. The CT scans from pelvis to feet were performed for more detailed evaluation and further treatments. The CT scans were not performed for this study, but for the patients’ own disease.

Line 137: I recommend replacing ”Each patient’s DICOM …” with “DICOM formatted CT scan images of each patient…”

Response: modified.

Lines 143 – 148: A figure explaining the construction of the planes would be helpful.

It is not completely clear how the safe zones respectively angles and screw lengths are defined. However, this is one of the most critical points in the paper. The figures definitely help, however it would be beneficial for the paper if clear, easy to understand definitions would be given.

Response: We have revised this section to make it easier to understand.

4. Results

Table 3 was missing, otherwise the results are presented clearly.

Response: This was a section that should had been removed. It is removed in this revision.

5. Discussion

Line 204: Please add space between “facilitate” and “screw”.

Line 206: Please add space between period and “Benedetti”

Response: corrected.
Lines 210 – 214: What is meant by “For 0.5-cm entrance points”? I would recommend changing “violation” into “penetration”.

Response: The distance between the entrance point and the pelvic brim was 0.5 cm. This sentence has been modified in the manuscript.

6. Limitations and shortcomings
Which medical conditions kept you from logging standard anthropometric data such as length and weight?

Response: Some patients had to sit on the wheelchairs. Collecting height and weight data was not very convenient to them. So we did not gather these data in this study.

7. Conclusions
Lines 260 – 262: “The minimum safe angels…”: this sentence should be rephrased to make it easier for the reader to understand the difference in the angles suggested for female and male pelvises.

Response: modified.

There is potential in the paper, the approach to define a safe zone for anterior column screw placement is promising. It would be interesting how this can help in daily clinical routine, this could also be further discussed. I would like to see the paper again after the revision.

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

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

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 interest.
Reviewer's report

Title: Digital Anatomical Measurements of Safe Screw Placement at Superior Border of the Arcuate Line for Acetabular Fractures

Version: 3 Date: 6 December 2014

Reviewer: Yi-xin CHEN

Reviewer's report:

The authors investigated the safe and effective screw angles and depths in reconstructed CT images, aiming to provide reference for the plate-screw fixation of anterior column of acetabulum. This is an interesting study whose findings are important. However, there are several questions as listed below.

Major compulsory revisions:

1. The authors selected five acetabular sections to perform subsequent measurements. Among these sections, as shown in Fig.1, section 1 and section 5 seemed to be defined according to the so-called optimal ball instead of the acetabulum, and therefore have nothing to do with the hip joint. This was different from the other studies. The authors should further clarify this point.

Response: Section 1 and 5 were regarded the edges of the acetabulum, which had less risk of joint penetration if the screw was not placed towards the joint. Since it is still possible that screws are placed at these spots during surgery, the safe screw lengths are more clinically relevant than the angles.

2. In this study, the entry points of the screws were defined at the superior cortical surface 5 mm lateral to the pelvic brim. Is there any clinical relevance for the authors to choose the distance of 5 mm?

Response: 5 mm was used as the distance from the screw entry point to the pelvic brim, because 5 mm was half of the width of the regular 10-mm plate. This distance is also used in other studies which investigated the screw placement in acetabular area.

Minor essential revisions:

1. There were numerous typos and grammar mistakes in the manuscript.

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.