Reviewer's report

Title: Biomechanical comparison of a novel transoral atlantoaxial anchored cage with established fixation technique - a finite element analysis

Version: 2
Date: 9 June 2015
Reviewer: Da-Geng Huang

Reviewer's report:

General comment:
The author established a FE model of new device for atlantoaxial fixation from anterior approach and compared the biomechanical properties between Cage+plate and Cage+TARP. The author’s purpose was to prevent potential disadvantages related to TARP fixation in treating of BI by using a Cage+plate device. Though the FE model has little to do with BI and it is very difficult to simulate BI, the FE result still can provide some advice for the treatment of BI using different fixation techniques.

- Major Compulsory Revisions
1. As the author said: It is challenging to model various conditions of BI, and the unstable model in the study was removing all transverse ligament elements. It is more like instability upper cervical model than BI. So maybe the FE model could not stand for BI very well.
2. The traditional TARP technique is without cage, so maybe it is better to compare with only TARP additional.
3. For the figure showed the result of ROM, it is better to represent the original data rather than the percent.

- Minor Essential Revisions
1. For Fig.5, the author should check again of the arrow that showed the maximum von Mises stress. For example, the arrows in Fig. 5 A, 5B and 5C of cage+plate definitely didn’t direct the right point of the maximum stress area.

- Discretionary Revisions
N/A

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.