Reviewer’s report

Title: Anterior cervical discectomy and fusion: Comparison of titanium and polyetheretherketone cages

Version: 1 Date: 19 July 2012

Reviewer: Isaacl Moss

Reviewer’s report:

General comments:
1. The authors present their case series comparing the use of titanium and PEEK interbody devices for disc space reconstruction after anterior cervical discectomy and fusion. This is an important topic, as there are a multitude of options for disc space reconstruction and a paucity of data to guide the surgeon’s choice. This paper reports on a relatively large cohort in comparison to other reports in the literature and will be of interest to the spine surgery community.

Please number your comments and divide them into

- Major Compulsory Revisions

2. The conclusion in the abstract as well as the body of the text states that modulus of elasticity of the chosen synthetic graft did not influence the outcome measures. The authors themselves state that there are other differences in the two cages types including the material itself, surface micro and macro architecture, as well as baseline differences in the cohorts. Therefore, I do not believe that the data in this paper supports the conclusion with respect to lack of influence of modulus of elasticity, it really only speaks to lack of influence of these particular materials given a consistent geometry in this cohort. Each material has numerous of physical properties, modulus of elasticity is only one of them. The conclusions should be restated to better represent the data.

3. The two cohorts had a statistically significant difference in age, with the PEEK cohort being older (57.64 vs 51.09). Older patients can be expected to have weaker bone and therefore a potentially higher rate of subsidence. This phenomenon may have introduced bias into the study favoring the titanium implants. This issue should be discussed in the paper.

- Minor Essential Revisions: (all are "Minor issues not for publication")

4. Background paragraph 2: TTN-cages have been criticized to produce a “minor clinical outcome”. Please clarify or re-word what is meant by “minor clinical outcome”.

5. Background paragraph 2 and Discussion paragraph 4: TTN implants “show a good osseointegration”, please revise syntax.

6. Methods paragraph 1: change “Patient collective” to “Patient cohort”
7. Methods paragraph 2: change “By making sure of the patients’ anonymity” to “by protecting the patients’ anonymity”.

8. Methods paragraph 6: clarify what is “physical recreation” in the post op protocol

9. Discussion paragraph 14 (Bone formation): “The comparatively little number of bone formation in our study may relate to the choice of diagnostic means and criteria to assess bony fusion. Assessing bone formation within the cages [30] was no criterion in our PEEK-group, since this would have compromised a proper comparison with the TTN-group on lateral radiographs.” Please revise syntax/word choice of underlined phrases for clarity.

10. Figure 1: clarify what is meant by “did not appear” – lost to follow up?

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

**Quality of written English:** Needs some language corrections before being published

**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