Reviewer’s report

Title: Cervical spine kinematics after anterior cervical discectomy with or without implantation of a mobile cervical disc prosthesis; an RCT

Version: 2
Date: 26 November 2014

Reviewer: Daniel Lubelski

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Discretionary Revisions:

# The authors describe use of a novel computer algorithm to determine the postoperative mobility, which, from what is described seems like a thorough approach. Will these data be analyzed (as well as defining the template areas, running the software, etc) in a blinded fashion?

# With the small sample size, do the authors believe that their study is powered to identify significant differences in complications, pain scale, or SF-36?

# The Discussion may include further description of the novelty of this study. There are dozens of prospective cohort and RCTs comparing outcomes of CDA vs ACD vs ACDF. Many of these studies have longer followup and larger sample sizes. Many of these previous studies have supported that CDA leads to improved segmental ROM, but much debate has revolved around the fact that, nonetheless, clinical and quality of life outcomes are similar. In addition to using a new implant, and a new method of analyzing the segmental range of motion, how will the conclusions of this study advance clinical knowledge on this topic?

Major Compulsory Revisions

# In the methods, within sample size calculation, the authors performed a power analysis to detect a 40% difference in fusion rate. Since the expected effect size is so large, they are sufficiently powered with a small sample size of 10-12 patients per group. What is the previous evidence that leads the authors to expect the effect to be so robust? Furthermore, why is fusion rate the outcome by which the power analysis is based on...if the primary outcomes are based on segmental range of motion?