Reviewer's report

Title: Biomechanical evaluation of immediate stability with rectangular vs cylindrical interbody cages in stabilization of the lumbar spine

Authors:

Dilip K Sengupta (dksg@hotmail.com)
SMH Mehdian (mehdianspine@hotmail.com)
Robert C Mulholland (rcmulholland@hotmail.com)
John K Webb (johnkwebb@compuserve.com)
Donna D Ohnmeiss (dohnmeiss@texasback.com)

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Reviewer: Dr Peter Cripton

Level of interest: A paper of limited interest

Advice on publication: Other (see below)

The majority of my original comments and questions have been adequately addressed in the Author's revised manuscript. My remaining comments and requests follow:

1. I disagree, based on my own experience and published studies that stepwise pure moment spine testing is significantly less repeatable than continuous constrained testing assuming that preconditioning load cycles are applied. However, the authors have addressed this point appropriately in their revised manuscript.

2. I suggest changing the second last sentence of the limitations paragraph to read: "The constrained system used here is certainly much simpler, faster, and allows continuous cyclical loading of the specimen, as opposed to the stepwise quasi-static loading often applied during pure moment testing."

3. Preload: In my initial review I asked that the preload application technique be explained. The authors provided me with a reference in their response to me but did not increase the detail in the paper. I have reviewed the referenced study by Chiba et al (Spine 1996 21:288-294). The preload application technique is not adequately described in that text. Nor does the counterweight shown in the Chiba article appear to be present in the apparatus photographs from the present study. Please add a description of the preload application technique for all three loading modes to the present manuscript. I do not understand, from Figure 1 in Chiba et al., how the applied preload could be made independent of the applied moment. The only force available to resist the preload force applied to the bottom of the specimen appears to be the actuator mounted eccentric load at the upper end of the specimen. It doesn't seem possible to me that the counterweight reload shown would still be applying compression to the specimen during extension loading. This issue is fundamental to the mechanical loading experienced by the spine specimens and could confound the results of the study so please clarify this in the manuscript.
Competing interests:

None declared.