Reviewer's report

Title: Role of the supine lateral radiograph of the spine in vertebroplasty for osteoporotic vertebral compression fracture: A prospective study

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Reviewer: John Stites

Reviewer's report:

Thank you for the opportunity to review this manuscript. I found this a difficult manuscript to read and I do have a number of issues to review. That being said I do believe that the authors have done some good work and it is worthy to be published.

This is a simple observational cohort study involving 37 patients with a total of 40 compression fractures. As such correlations can be drawn but relationships between findings can only be surmised and not established.

I feel that too much is attempted in this paper. I think the authors would be better off focusing on the supine radiograph as a means of identifying intra-vertebral clefts.

There are too few patients to draw any clinically relevant inferences to the changes, or lack of changes in the VAS pain scale.

I have an issue with combining Cobb angle measurements and comparing means among different groups. There are too many variables contributing to the Cobb angle in individual patients including general morphology, levels, severity and numbers of compression fracture. If a comparison is made it should be direct and not summarized.

I am further confused by the attribution of significance in curve changes between the pre-op standing and pre-op supine radiographs in those who do not demonstrate an IVC. According to the data, half of those who did not demonstrate an IVC on supine radiographs did demonstrate their presence on MRI.

There are an undue number of acronyms in the manuscript that make it difficult for the reader. In writing the paper the authors get very close to their subject and so completely understand what they are referring to when they say “VHR2 or A2.” The reader has to constantly refer back to the definitions earlier in the paper. Many of the acronyms are unnecessary.

I feel that the real strength of the paper is demonstrating the potential utility of using supine radiographs in either patient selection or as an indicator of outcome. Using the MRI as a gold standard, supine radiographs exhibit a Sensitivity of .71 as compared to upright films that yield a Sensitivity of .33 in this study. The
demonstration that supine radiographs are twice as sensitive as upright in identifying intra-vertebral clefts is the clinically important message of this paper.

My suggestion is to focus on this aspect of the manuscript. I would only report the information on Cobb angles, VAS scores and VH ratios in descriptive terms since the statistical analysis of these items adds nothing to the manuscript. I think it is reasonable to refer to the vertebral compression fracture as VCF and intra-vertebral cleft as IVC. Please minimize the use of other acronyms.

I hope that the authors find my comments helpful. I believe with modification this would be a worthwhile manuscript to publish.

**Level of interest:** An article of importance in its field

**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'