Reviewer’s report

Title: Correlation analysis between the magnetic resonance imaging characteristics of osteoporotic vertebral compression fractures and the efficacy of percutaneous vertebroplasty: A prospective Cohort Study

Version: 0 Date: 06 Oct 2017

Reviewer: John Albright

Reviewer’s report:

This is a prospective study of 93 patients with osteoporotic vertebral compression fractures who had MRI's and were injected with methacrylate. The authors broke the MRI findings up into groups according to the degree and range of bone marrow edema on MRI. Patients were followed up at one day, one month, six months, and twelve months post op. While the outcome scores for pain and function demonstrated significant differences before and after surgery there was a relationship to the MRI grading to the outcomes over the first few months but disappeared six months down the road. This study does add to our current state of knowledge particularly to regard to the value of the MRI.

Specific Comments:

Introduction Page Line 49: You indicate in the intro that bone marrow edema can identify acute or subacute fractures and is the best indication for PVP injections. If this has already been proven in the three references cited, why do you need the study? You need to build a case by closer assessment about what was lacking in the studies and how you have done it differently to make the reader more sophisticated in their management approach.

Introduction Page Line 59: You have purpose but you do not state a hypothesis. I assume that your hypotheses are that the degree of edema predicts degree of success of injection.

Materials and Methods Line 42: "...were classified as newly onset fractures." Just how long does edema last after compression fracture? In other words, how new is new?

Materials and Methods Line 50: "...edema ranging from 75% to 100%..." percent of what; total area?

Materials and Methods Line 61: "The effected vertebral body was confirmed via physical examination and MRI." If the patient was asleep under anesthesia and you did not obtained an x-ray or fluoroscopy how do you avoid missing the correct vertebral level? This is a potentially major concern for the spine surgeon operating on the wrong level. Please be very clear as to exactly how you avoid mistakes with a step by step procedure. Does a physical exam with a patient in a prone position actually help at all? Are cross table x-rays sufficient? Is the
fluoroscopy sufficient? Does the VSA machine work to accurately locate the effected vertebral body?

Methods Line 19: "...or severe operative complications occurred." Please provide references of who reported this and how many times has it happened on a percentage basis.

Discussion Page 2 Line 41: "On the contrary PVP is not suitable for the treatment of old vertebral compression fractures..." Please see earlier statement that is in conflict with this and clarify.

Discussion Page 3 Line 13: "1) this work focused on single vertebral fractures..." You actually often injected at least two vertebral fractures with a stated mean of 1.9 vertebral bodies.

Discussion Page 3 Line 17: "2) "because the degree of pain relief differs between local and general anesthesia..."Where did this come from? Provide a reference.

Are the methods appropriate and well described?
If not, please specify what is required in your comments to the authors.

Yes

Does the work include the necessary controls?
If not, please specify which controls are required in your comments to the authors.

Yes

Are the conclusions drawn adequately supported by the data shown?
If not, please explain in your comments to the authors.

Yes

Are you able to assess any statistics in the manuscript or would you recommend an additional statistical review?
If an additional statistical review is recommended, please specify what aspects require further assessment in your comments to the editors.

I am able to assess the statistics

Quality of written English
Please indicate the quality of language in the manuscript:

Acceptable

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