Author’s response to reviews

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

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Specific Comments:

1. 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.

Answer: The three references show that OVCF is the best indication for PVP injections, however, there was no further study on the correlation between vertebral bone marrow edema and postoperative efficacy of PVP. In this paper, the vertebral bone marrow edema of OVCF was classified, postoperative efficacy of PVP was compared and analyzed.

Revise (Add): However, the relationship between bone marrow edema and PVP was not further explained.

2. 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.
Revise (Add) : the hypothesis of study is that the degree of edema predicts degree of success of injection.

3.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?

Answer : the vertebral bone marrow edema is associated with a new fracture, usually within 2 weeks after the fracture. If it is an old fracture, there is no bone marrow edema signal.

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

Answer : In the sagittal plane, percent= the area of bone marrow edema/ the area of the entire vertebral body*100%, which is the judgment of the experienced imaging physician.

5.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?

Answer : I agree with you very much. The determination of fracture vertebral body is very important. Here is my mistake. I will make revise.

Revise : The effected vertebral body was confirmed via physical examination, x-ray, CT and MRI. Usually, we estimate the position of the vertebral body by the bone marker. For example, the iliac crest is at the L4/5 level. Place the kirschner wire in the estimated position and identify the fracture vertebra by comparison with X-ray intraoperative and X-ray, CT, MRI pre-operation. It is necessary to make full use of the bone markers in the X-ray for positioning, and sometimes it needs to use multiple kirschner wire. For example, If T12 fracture, according to T12 whether there are ribs, vertebral body compression, greater osteophyte and so on to confirm the vertebral body. If L4 fracture, according to the position of sacrum, vertebral body compression, greater osteophyte and so on to confirm the vertebral body.

6.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.

Answer: Due to the translation of Chinese to English, The expression here is not appropriate. It needs to be modified.
Revise: Or to stop the injection when serious imaging complications are found. In other words, in intraoperative X-ray, a large amount of bone cement was leakage outside the vertebral body.

7. 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.

Answer: In this paper, there is no bone marrow edema signal in the MRI of old fracture, so treatment with PVP was not effective. It is not suggested that old fractures should be treated with PVP. There is no inconsistency in the article.

8. 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.

Answer: At the beginning of this study, single segment vertebral fracture was selected. But the single segment case is small. Subsequent cases were also included multiple segments cases. There is a mistake and I will revise it.

Revise: The number of fracture vertebral body was not uniform (One, two, three vertebral bodies). Inconsistency of number will lead to bias from patients.

9. 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.

Answer: It is mainly to consider whether the relief of pain can be affected by different anesthesia, and the relevant literature of surgery can be used for reference[1].

Mehmet Büilent Balioglu, M.D. (Reviewer 2): A comparative study examining the importance of MRI use and the efficacy of PVP in OVCF treatment.