

**Letters to the Editor**

## **Re: Factors Affecting Delayed Union of Vertebral Fractures Following Percutaneous Kyphoplasty**

### **TO THE EDITOR:**

We read with deep interest the paper on factors affecting delayed union of vertebral fractures following percutaneous kyphoplasty by He Xin et al (1). We commend the authors for performing this interesting study as these helpful results would be useful to make a balanced treatment decision planning in clinical practice. However, we have some comments about this paper.

First, the vertebral recompression fracture of initial fracture (level treated) after percutaneous kyphoplasty (PKP) in patients with osteoporosis could be named delayed union of vertebrae according to the criteria (2,3) for delayed union of vertebrae presented by the authors. Many studies have reported that the number of initial fractures is an independent risk predictor of secondary vertebral compression fracture after percutaneous vertebroplasty (2,3). The recompression fracture on which the initial fracture suffered delayed union could be the result of adjacent vertebral compression fractures. The authors studied only risk factors for single segmental delayed union of vertebral compression fractures after vertebroplasty and excluded cases with preoperative fractures involving 2 or more levels. This analysis may compromise the credibility and accuracy of the outcomes.

Second, the authors reported that some factors such as preoperative bone mineral density (BMD), intra-vertebral cleft, and restoration rate of vertebral height could be associated with delayed union of vertebrae after PKP in patients with osteoporotic vertebral compression fracture (OVCF). According to our experience, bone cement distribution was significantly correlated with the occurrence of vertebral recompression fractures and subsequent occurrence of delayed union of vertebrae. Gaughen et al (4) suggested that sufficient filling of bone cement in vertebral body is a key factor associated with recompression. It has been found that recompression usually occurred at these non-PMMA supported areas. Zhang Liang et al (5) found that patients with bone cement distributed around both the

upper and lower endplates had the lowest rate of experiencing recompression compared to other patterns of bone cement distribution. Bone cement distribution could be an important factor associated with delayed union of vertebrae, but has not been mentioned adequately by the authors in this study.

Finally, the use of analgesics (type and duration of analgesics used) could have significantly affected the judgment of delayed union of vertebrae in the present study by the authors. Use of particular analgesics and the duration should have been considered by the authors in all patients so that the data is unbiased. Even for evaluation of ODI and VAS, patients who are using analgesics in higher doses and for longer duration are likely to have improvement in ODI and VAS as compared to patients who did not do so. Control over the analgesia is a very important factor which has not been addressed adequately in this study.

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