

# RE: complications attributable to the use of rhBMP-2 inside the femoral ring allograft during anterior lumbar interbody fusion

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## Letters

### **Complications Attributable to the Use of rhBMP-2 Inside the Femoral Ring Allograft during Anterior Lumbar Interbody Fusion**

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**To the Editor:**

**Complications Attributable to the Use of rhBMP-2 Inside the Femoral Ring Allograft during Anterior Lumbar Interbody Fusion**

We read with great interest the prospective analysis of interbody fusion rates by Slosar et al. [1] in which the exceptionally excellent results concerning the use of femoral ring allografts (FRA) with rhBMP-2 during anterior lumbar interbody fusion (ALIF) in addition with posterior pedicle screw fixation were reported. Namely, the rhBMP-2 group had a 100% fusion rate in all levels attempted (n=103), there were no complications attributable to the use of rhBMP-2 and no osteolysis or fragmentations of the allografts were observed. But, there was no mention of the subsidence which is defined as a fusion device sinking into one or both of the adjacent vertebral bodies [2] and end-plate erosions.

On the other side, Vaidya et al. [3] who used machined allograft spacers centrally filled with rhBMP-2 and additional posterior pedicle screw fixation during ALIF and also had 100% fusion rate, found that 70% (14 of 20) of levels had signs of early lucency and underwent significant (> 10%) graft subsidence of a mean of 27% (13% to 42%). CT scans obtained from patients who received allograft/rhBMP-2 revealed two phenomena that may have contributed to subsidence. First, early lucency and incorporation of the allograft were noted, which may have resulted in a loss of structural support. Secondly, there was significant end-plate erosion in each rhBMP-2 case, an appearance that was not evident in patients treated without rhBMP-2.

End-plate erosions have been observed by CT during the first months of follow up in 3 of 4 published studies concerning the use of FRA or similarly shaped allografts and rhBMP-2 during ALIF [3-5] with [3,4] or without additional posterior instrumentation [5]. The only

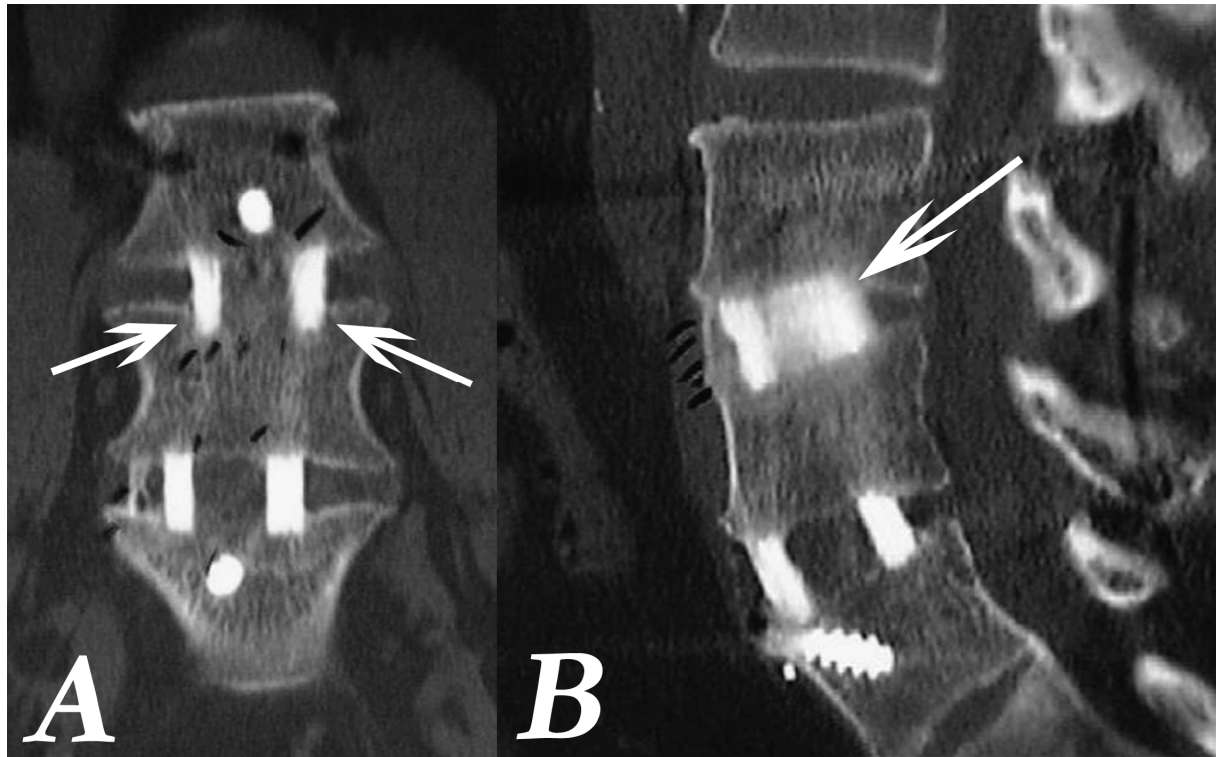
study, beside the one of Slosar et al., which didn't report end-plate erosion, was the case report by Lee et al. [6]. It was even expected as the CT was not used during the follow up. By the way, Lee et al. reported about histological analysis of a displaced femoral ring allograft spacer filled with rhBMP-2 soaked collagen sponge in a patient who also had additional posterior instrumentation 6 months after the surgery

The total doses of rhBMP-2 used per level of fusion were similar among mentioned studies (from 2 mg to 4,2 mg) (Joon Y. Lee, MD, written communication, September, 2007) [3,4,6] including Slosar et al. who used 3 mg of rhBMP-2 [1]. Only Pradhan et al. used higher dose of rhBMP-2 per level of fusion, i.e. 12 mg (Ben B. Pradhan, MD, MSE, written communication, September, 2007) [5].

As the subsidence and end-plate erosion have not been mentioned at all in the entire manuscript of Slosar et al. [1], not even as possibilities of unanticipated adverse events related to the use of rhBMP-2, it is probable that authors have not been aware of these disorders at the time. The probability was confirmed when an overlooked subsidence of FRA allograft 6 months following surgery at Figure 1 and 2 was noticed in the study of Slosar et al. (Figure 1) [1]. In the light of the presented findings, we kindly ask the authors to evaluate once again the CT scans from the patients involved in the study obtained 6 months after the operation concerning the subsidence and end-plate erosions and to inform reading audience about the results.

## Figure Legend

Figure 1. From the Slosar et al study. The arrows point the overlooked subsidence of femoral ring allograft into vertebral body 6 months following surgery, A) anterior view, B) lateral view.



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