Answer to the Letter to the Editor of F. Lucas et al. concerning “Outcome of thoracolumbar burst fractures treated with indirect reduction and fixation without fusion” by Huilin Yang, Jin-Hui Shi, Molly Ebraheim, Xiaochen Liu, Joseph Konrad, Ibrahim Husain, Tian-Si Tang, Jiayong Liu. Eur Spine J. Published online 8 August 2010

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We would like to thank Drs. Emery and Lucas for their interest in our paper: Outcome of Thoracolumbar Burst Fractures Treated with Indirect Reduction and Fixation without Fusion, and for bringing up some interesting points.

We do agree that disc degeneration and disc injury occurs at vertebral levels adjacent to the injury level after implantation removal but without any clinical consequences.

There are many factors associated with disc space changes. Agreeably, disc changes are due to adaptations to the new mechanical conditions of the vertebral column, but we do believe other factors have a role in the change of disc space height such as the non-physical effects of indirect reduction. Normally, the discs bear weight, but with indirect reduction the discs are stress shielded. Thus, diffusion, the primary means of delivering nutrition to the disc is decreased, because a normal amount of stress is needed for diffusion to occur [1]. In vitro studies of cultured disc cells have shown that abnormal pressures can influence the cells' production of polyglycoside, collagen and mRNA expression, as well as increase catabolism and disc degeneration [2, 3].

Additionally, reduction of the fractured bone simply allows for the healing of the bone but does not allow for a

similar type of biologic repair to a damaged disc. Thus, indirect reduction provides no means of facilitating repair to an injured disc and when the hardware is removed normal weight bearing and range of motion causes degeneration to occur rapidly.

Again, we would like to thank Drs. Emery and Lucas for their interesting points regarding the changes in disc space height and we do believe further investigation into that topic is necessary.

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