Comments on Yang H-L et al.: Fluoroscopically-guided indirect posterior reduction and fixation of thoracolumbar burst fractures without fusion

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Dear Editor,

We enjoyed with great interest the article by Yang et al. entitled “Fluoroscopically-guided indirect posterior reduction and fixation of thoracolumbar burst fractures without fusion” [1]. Thus, we would like to know more about the authors’ study to understand it more clearly, because we believe it has many flaws and raises several questions. Our issues are as follows:

1. The authors explained that they created tension on the posterior longitudinal ligament (PLL) for reduction [4, 6]. It is generally known that the PLL participates partially in reduction of intracanal retropulsed fragments, and that the annulus fibrosus (AF) plays the main role in reduction of the collapsed vertebral height. Therefore, the authors should describe the integrity of AF and PLL, based on the MRI findings [2–6].
2. How long did the authors keep the patients in bed postoperatively? Was this based on the severity of the burst fractures? And what is meant by regaining trunk control?
3. In the authors’ results section there were no descriptions of vertebral fracture consolidation (healing) time after surgery, either clinical or radiological [4].
4. There was no mention of the initial fracture stability of each patient. What fracture classification did they use (TLISS, Magerl/AO, McCormack, or Denis classification)?
5. There was also no mention of the upper and lower discs of the fractured vertebra at the final follow-up; was there no loss of the regained vertebral and disc heights after instrument removal? The authors reported that implants were removed at six to 12 months following surgery. Did the authors remove the instrument routinely in all patients?
6. The authors stressed that fluoroscopy was the key to indirect fracture reduction; however, we feel that fluoroscopy plays no part in fracture reduction. It is the imaging method which confirms the accuracy of fracture reduction. We have routinely used the C-arm in instrument-aided ligamentotaxis in the operating theatre for over 30 years. Our experience with C-arm fluoroscopy has demonstrated that it can not clearly show the one-line sign, and the vertebral height restoration can only be roughly confirmed.
7. In surgical management of the upper or lower half of the vertebral body burst fracture, reduction can be made by tensing the annular ligaments of the upper and lower segments of the fractured vertebra if the instrument-aided ligamentotaxis is attempted after the authors’ instrumentation method. For fracture reduction, more forceful distraction in case of the authors’ short segment fixation should be applied, which may lead to fixation failure or screw toggling.

If the pedicle screw is additionally placed on the fractured vertebra, distraction of only the upper or lower segment alone can reduce fracture [4]. However, in cases of shattered fracture involving both the upper and lower end plates, both upper and lower AF should be tensed for ligamentotaxis. What are the authors’ views?

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8. Another question is why the authors used the straight rod without a rod sleeve? In correction of kyphosis, a rod sleeve or contoured rods are more effective and reduce the distraction force.
9. The inclusion criteria of the authors' study are not clearly defined (e.g. status of AF, PLL, anterior longitudinal ligament, posterior ligament complex, facet joint, and fracture of bony posterior element, etc.). We think that this study involved both stable bursting fractures and unstable bursting fractures. Many spinal surgeons choose conservative treatment for stable fractures. Thus, we think the effectiveness and safety of this study are more valuable in some types of severe stable fractures or specific types of unstable fractures.

It is our humble wish that answers to our questions will satisfy the readers in understanding the authors' paper.

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