Letter to the Editor

Transpedicle Body Augmenter: A Further Step in Treating Burst Fractures

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Published online: 20 August 2008
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Dear Sir,

We read with interest the article “Transpedicle Body Augmenter A Further Step in Treating Burst Fractures” by Li et al. [5]. This article addressed short-segment fixation well by comparing patients treated with a transpedicle body augmentor with a control group of patients treated with short-segment posterior instrumentation.

The issue of short-segment versus long-segment fixation is a matter of debate among spine surgeons. Where short-segment fixation allows preservation of more mobile segments of the spine, it compromises the strength of fixation construct [4, 6]. This led to a new dimension in management of vertebral fractures, that is, augmentation of short-segment fixation. The methods used for augmentation of short-segment fixation include kyphoplasty [1], vertebroplasty [2], transpedicle bone grafting [3] and transpedicle body augmentor [5]. Except for transpedicle bone grafting, good results have been reported for all other forms of augmentation as compared with short-segment fixation alone. Short-segment pedicle screw fixation is reportedly

associated with a 20% to 50% incidence of pedicle screw failure and progressive spinal deformity. The question today is whether the various techniques used for augmentation of short-segment pedicle screw fixation have results comparable to those of long-segment pedicle screw fixation, which we believe is a gold standard [8] for posterior spine stabilization as far as sagittal index and anterior body compression are concerned.

We have some concerns regarding the study by Li et al. [5]. First, the postoperative protocol is important in any kind of spinal surgery, however, the authors provide no details of the protocol in this article. As delayed ambulation after short-segment fixation is known to give good results [7], postoperative protocol with specific mention of ambulation should be provided. Moon et al. [7] reported short-segment fixation without posterolateral fusion is an effective procedure for compression and burst fractures if postoperative mobilization is delayed by 2 to 4 weeks. It would be better if the results of the transpedicle body augmentor were compared with results of long-segment fixation.

Second, Li et al. report mean times of surgery as 66.1 ± 12.1 minutes and 63.4 ± 16.6 minutes for the augmentor and control groups respectively. Does this mean no additional time is required for: (1) preparation of bilateral pedicle tunnels to the fractured vertebra by an awl followed by serial custom made trials (enlargers) to prepare for TpBA passage; (2) harvesting the bone graft from the iliac crest; (3) filling the vertebral body with autologous bone graft; (4) inserting the augmentor through the pedicle; and (5) filling the pedicle tunnel space with bone graft?

Third, blood losses reported for the augmentor and control groups are 216 ± 65 cc and 240 ± 87 cc, respectively, which means the blood loss was less in the group in which two additional pedicle tunnels were made and bone

(Re: Li KC, Hsieh CH, Lee CY, Chen TH. Transpedicle body augmentor: a further step in treating burst fractures. *Clin Orthop Relat Res.* 2005;436:119–125.)

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graft was harvested from the iliac crest. If this is correct, the authors should state the reason.

Fourth, in the Materials and Methods section, Li et al. reported that flexion and extension xrays were taken after 1 year and at the final visit. The purpose of flexion-extension xrays is not mentioned in the article. Generally, flexion-extension xrays are required to judge bony union after spinal fusion is attempted. However, Li et al. compared only results of vertebral body augmentation with short-segment fixation alone. Therefore, the authors should state what additional information was acquired from the flexion-extension xrays once the anterior body height and kyphosis angle were measured on neutral thoracolumbar radiographs.

Finally, Li et al. reported one failure necessitating implant removal. In this case, the patient had intraoperative pedicle rupture during augementer insertion, which later caused root irritation and neuralgia. As per our knowledge, it is safe to violate the superior and lateral cortices of the pedicle. The authors should state whether the patient had neurologic symptoms even though the inferior and medial cortices of the pedicle were preserved or if the augementer was implanted despite violation of the inferior or medial cortex of the pedicle.

References

1. Acosta FL Jr, Aryan HE, Taylor WR, Ames CP. Kyphoplasty-augmented short-segment pedicle screw fixation of traumatic lumbar burst fractures: initial clinical experience and literature review. *Neurosurg Focus*. 2005;18:e9.
2. Cho DY, Lee WY, Sheu PC. Treatment of thoracolumbar burst fractures with polymethyl methacrylate vertebroplasty and short-segment pedicle screw fixation. *Neurosurgery*. 2003;53:1354–1360.
3. Knop C, Fabian HF, Bastian L, Blauth M. Late results of thoracolumbar fractures after posterior instrumentation and transpedicular bone grafting. *Spine*. 2001;26:88–99.
4. Kramer DL, Rodgers WB, Mansfield FL. Transpedicular instrumentation and short-segment fusion of thoracolumbar fractures: a prospective study using a single instrumentation system. *J Orthop Trauma*. 1995;9:499–506.
5. Kung-Chia Li, Ching-Hsian Hsieh, Chiu-Yin Lee, Tain-Hsiun Chen. Transpedicle body augementer: a further step in treating burst fractures. *Clin Orthop Relat Res*. 2005;436:119–125.
6. McLain RF, Sparling E, Benson DR. Early failure of short-segment pedicle instrumentation for thoracolumbar fractures: a preliminary report. *J Bone Joint Surg Am*. 1993;75:162–167.
7. Moon MS, Choi WT, Sun DH, Chae JW, Ryu JS, Chang H, Lin JF. Instrumented ligamentotaxis and stabilization of compression and burst fractures of dorsolumbar and mid-lumbar spines. *Indian J Orthop*. 2007;41:346–353.
8. Tezeren G, Kuru I. Posterior fixation of thoracolumbar burst fracture short-segment pedicle fixation versus long-segment instrumentation. *J Spinal Disord Tech*. 2005;18:485–488.