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## Letter to the Editor

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# RE: Efficacy of Cervical Interlaminar Epidural Steroid Injections

Laxmaiah Manchikanti, MD<sup>1</sup>,  
 Ramsin Benyamin, MD<sup>2</sup>, Alan David Kaye, MD, PhD<sup>3</sup>,  
 Joshua A. Hirsch, MD<sup>4</sup>

<sup>1</sup>Department of Anesthesiology and Perioperative Medicine, University of Louisville, Louisville, KY, USA, Pain Management Center of Paducah, Paducah, KY 42003, USA; <sup>2</sup>Millennium Pain Center, Bloomington, IL, USA, Department of Surgery, College of Medicine, University of Illinois, Urbana-Champaign, IL 61701, USA; <sup>3</sup>Department of Anesthesia, LSU Health Science Center, New Orleans, LA 70112, USA; <sup>4</sup>NeuroInterventional Spine Service, Interventional Care, Massachusetts General Hospital, Department of Radiology, Harvard Medical School, Boston, MA 02114, USA

**Index terms:** Cervical; Epidural; Radiculopathy

To the Editor:

Yoon et al. (1) have published a manuscript comparing the midline and paramedian approaches for the efficacy of cervical interlaminar epidural steroid injections in unilateral cervical radiculopathy. The study is important in multiple aspects, as it demonstrates a lack of significant difference in effectiveness between the midline and paramedian approaches in cervical interlaminar epidural steroid injections for unilateral radiculopathy, although it was a retrospective study. Cervical epidural steroid injections have been a focus of controversy in the field recently for their potential neurological complications (2-4). Benzon et al. (2), in a recent article, established procedural standards asserting that all cervical interlaminar epidural injections

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**Corresponding author:** Laxmaiah Manchikanti, MD, Department of Anesthesiology and Perioperative Medicine, University of Louisville, Louisville, KY, USA, Pain Management Center of Paducah 2831 Lone Oak Road, Paducah, KY 42003, USA.

• Tel: (1270) 554-8373 ext. 101 • Fax: (1270) 554-8987  
 • E-mail: drlm@thepainmd.com

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should be performed under fluoroscopy with multiple views and contrast injection. Further they have recommended that needle placement should ideally be at C7 and T1, possibly at C6 and C7, but no higher than C6-7, based on gaps in the dura (2-4). Simultaneously, Manchikanti et al. (4) concluded that gaps in the dural membrane do not translate into dural punctures. In fact, they found that dural punctures were higher at C6-7 and were the same at C5-6, rather than entry at C7-T1 or C5-6. In line with the manuscript by Manchikanti et al. (4), the authors of the present manuscript showed that they entered the epidural space between C4 and C5 to C7 and T1, which is higher than the descriptions of Manchikanti et al. (4). Benzon et al. (2) and Rathmell et al. (3), all of who stated that these should not be performed above C6-7.

Consequently, this manuscript not only assesses the results of midline and paramedian approaches, but also demonstrates that the procedure can be performed safely between the C4 and C5 levels. Further, this study also focuses on the midline rather than the paramedian approach, which has its own disadvantages as the authors have described. Given their large databases, it would have been interesting if the authors had commented on the rates of dural punctures at various levels of the procedure.

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## Response

Ji Young Yoon, MD<sup>1</sup>, Jong Won Kwon, MD<sup>1</sup>,  
Young Cheol Yoon, MD<sup>1</sup>, Jongseok Lee, PhD<sup>2</sup>

<sup>1</sup>Department of Radiology and Center for Imaging Science, Samsung Medical Center, Sungkyunkwan University School of Medicine, Seoul 06351, Korea; <sup>2</sup>School of Business Administration, Hallym University, Chuncheon 24253, Korea

Thank you for your comments.

The authors (of the articles that you cited) recommended that it not be performed at higher than the C6–7 level (1-3). They performed cervical interlaminar epidural injections using the loss of resistance technique under a posteroanterior fluoroscopic view. To the best of our knowledge, this method is not real-time monitoring for the procedures, so the risk of dural puncture and spinal cord injury is not negligible. However, we performed the cervical interlaminar epidural injections using the radiographic loss of resistance technique under a lateral fluoroscopic view. We used the angiography suite, not the C-arm, and performed the procedures by injecting contrast medium under continuous real-time lateral view monitoring while the spinal need tip passing through the spinolaminar line

(4). Thus, we are calling this method: the radiographic loss of resistance technique. This technique enabled us to perform the procedures at a higher level.

There was no dural puncture in our study at any levels. Among the 182 cervical interlaminar epidural injections, three were performed at C4–5.

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