

## Brief Commentary

## **e** In Defense of the Meticulous: A Case Against Ambiguity, and a Time to Standardize

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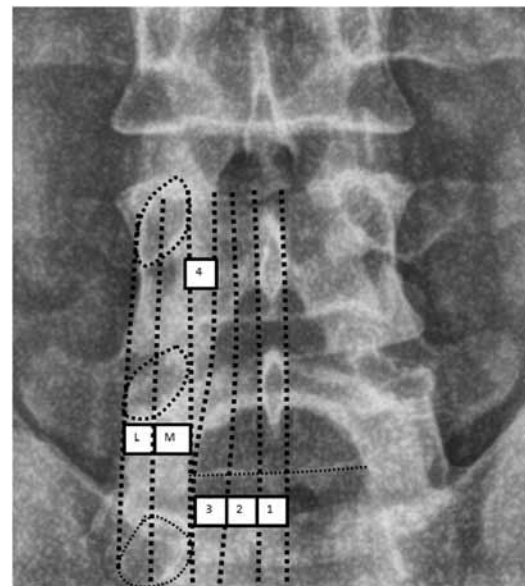
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All too often, the meticulous interventionalist, the physician looking for a precise pathology, the one devoted to target specificity, is discounted by many who maintain that such idealism is misplaced and does not influence outcomes. We would like to commend the authors of the article on anatomical flow patterns in the lumbar epidural space for providing further evidence that target access is critical for success (1). The authors have once again shown that parasagittal interlaminar epidural steroid injections are more likely to place the injectate into the ventral epidural space (1-3). The logic and the evidence are aligned. What is even more striking in these studies is the correlation of clinical success rate with the rate of ventral epidural access by the injectate (1,3).

In contrast, the problem of imprecision was demonstrated by the New England Journal of Medicine study on spinal stenosis that compared outcomes for epidural steroid plus local anesthetic to those for local anesthetic only. Target identification and access became subservient to routine practice. Construct validity was lost. No differences were to be expected. No differences could be found (4). Of course, a study rooted in precision could arrive at the same results; those results would however be more translational.

A parasagittal approach merely implies anything off the mid-sagittal plane. Indeed, only a closer scrutiny of these articles reveals that the needle was in fact placed in the most lateral section of the interlaminar opening. A busy practitioner may

*Fig. 1. Interlaminar zones: Zone 1 lies within the lateral margins of spinous process and may be further delineated as right or left. The area between the lateral margin of spinous process and the lateral margin of the interlaminar opening may be subdivided equally into Zone 2 and Zone 3. Zone 4 lies between the lateral margin of interlaminar opening and the medial margin of the pedicle and is usually non-existent at L5, as the margins overlap. The horizontal line further divides interlaminar Zones 1, 2, 3 into 2 equal parts: the superior and the inferior. The pedicle may be divided into 2 halves: the medial half representing Zone M and the lateral half representing Zone L and these are relevant for reporting a transforaminal needle location as seen in the AP view.*



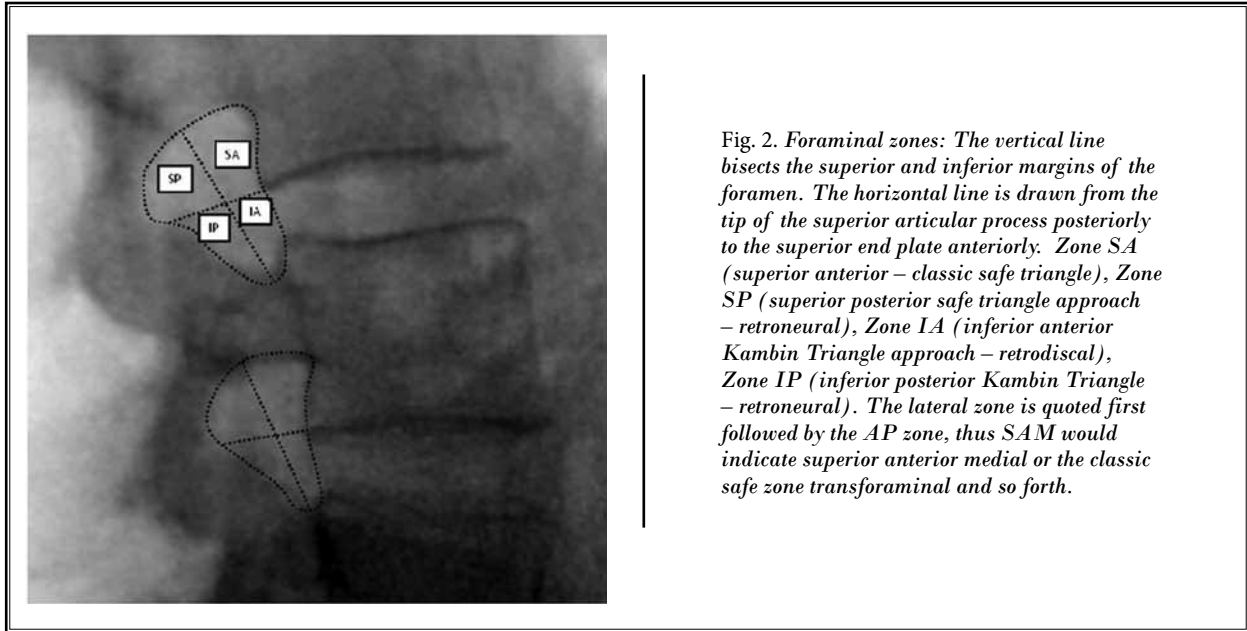


Fig. 2. Foraminal zones: The vertical line bisects the superior and inferior margins of the foramen. The horizontal line is drawn from the tip of the superior articular process posteriorly to the superior end plate anteriorly. Zone SA (superior anterior – classic safe triangle), Zone SP (superior posterior safe triangle approach – retroneural), Zone IA (inferior anterior Kambin Triangle approach – retrodiscal), Zone IP (inferior posterior Kambin Triangle – retroneural). The lateral zone is quoted first followed by the AP zone, thus SAM would indicate superior anterior medial or the classic safe zone transforaminal and so forth.

read the studies cursorily, place the needle off-midline, but might not achieve the same level of success for ventral spread. Furthermore, it is not known how often the goal of adhering to the extreme edge was attained and if there was any difference in ventral epidural access where the final needle position was in the very edge or more midline. This is in fact impossible to communicate because there is no accepted terminology to describe the exact needle location. Commonly used terms such as off-midline, paramedian, paracentral, parasagittal, gutter, and paraforaminal remain loose, ambiguous, and open to individual interpretation. We have previously published a lexicon for objectively describing the

needle location on a radiograph during epidural access (5,6). Perhaps there is no better case made for validation and adoption of such standard terminology (Figs. 1 & 2) as is made by these studies.

#### Conflict of interest

Each author certifies that he or she, or a member of his or her immediate family, has no commercial association (i.e., consultancies, stock ownership, equity interest, patent/licensing arrangements, etc.) that might pose a conflict of interest in connection with the submitted manuscript.

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