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## Epidural Catheter Insertion and Satisfactory Analgesia

*To the Editor:*—D'Angelo *et al.*<sup>1</sup> found that women who had epidural catheters threaded 2 cm into the epidural space had the lowest incidence of unilateral analgesia, but the catheters were dislodged and replaced more frequently than those threaded 4, 6, or 8 cm. They also found that threading catheters 6 cm minimized the risk of intravenous cannulation and catheter dislodgment, but women in the 6-cm group had a greater incidence of unilateral analgesia that required catheter manipulation to correct. They concluded that the length of epidural catheter insertion should "vary with the anticipated duration of labor or mode of delivery." They recommended threading epidural catheters 2 cm for a woman likely to experience a short labor and 6 cm when prolonged labor or cesarean section is likely.

This conclusion is based on the assumption that one can predict obstetric outcome—something I am not aware anyone can do. Based on their results, I would have concluded that all epidural catheters should be threaded 6 cm. I would not thread a catheter 2 cm knowing that it has a high failure rate, hoping that labor is short and that the woman will not need a cesarean section. Also, if one could predict that the duration of labor would be short, I would use a combined technique with intrathecal opioid.

The authors also concluded that, if unilateral analgesia occurs, catheter manipulation can be effective and may be more time-efficient than epidural catheter replacement. One can only reach this conclusion if the time to achieve satisfactory analgesia is short, which was not documented in their study. If it took 65 min in the 8-cm group to achieve patient comfort with catheter manipulation, which is the maximum time allotted by the authors to achieve analgesia with catheter manipulation, I would conclude that the epidural anesthetic should have been replaced. Also, this study does not address whether catheter manipulation was the variable that led to a successful anesthetic or whether giving more medication was the important variable. Indeed, it has been questioned whether catheter position is responsible for inadequate analgesia.<sup>2</sup>

Although not stressed in their article, any conclusions should be applied only to open-tip (single-orifice) epidural catheters. We published a prospective, randomized, double-blind study that defined the optimal catheter length that should be threaded for the woman in labor using multiorifice catheters (Perifix, B. Braun, Bethlehem,

PA).<sup>3</sup> We threaded the epidural catheters 3, 5, or 7 cm into the epidural space and administered a 3-ml test dose of 0.25% bupivacaine followed by 10 ml 0.25% bupivacaine. We found that catheters threaded 5 cm provided the highest quality of analgesia with the lowest complication rate. It is difficult to compare the results of our study with those of D'Angelo *et al.* because of the difference in catheters and medications used. However, it would appear that, with both open-end and multiorifice catheters, the optimal length for insertion of an epidural catheter is 5–6 cm and not 2–3 cm as previously recommended.<sup>4,5</sup>

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### References

1. D'Angelo R, Berkebile BL, Gerancher JC: Prospective examination of epidural catheter insertion. *ANESTHESIOLOGY* 1996; 84:88–93
2. Gielen MJM, Slappendel R, Merx JL: Asymmetric onset of sympathetic blockade in epidural anaesthesia shows no relation to epidural catheter position. *Acta Anaesthesiol Scand* 1991; 35:81–4
3. Beilin Y, Bernstein HH, Zucker-Pinchoff B: The optimal distance that a multi-orifice epidural catheter should be threaded into the epidural space. *Anesth Analg* 1995; 81:301–4
4. Brown DL: Spinal, epidural and caudal anesthesia. *Anesthesia*. 4th edition. Edited by Miller RD. New York, Churchill Livingstone, 1994, pp 1522–5
5. Shnider SM, Levinson G, Ralston DH: Regional anesthesia for labor and delivery. *Anesthesia for Obstetrics*. 3rd edition. Edited by Shnider SM, Levinson G. Baltimore, Williams and Wilkins, 1993, pp 135–53

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*In Reply:*—The management of epidural catheters for laboring patients can be quite labor intensive; Michael *et al.*<sup>1</sup> reported a 33% incidence of inadequate analgesia after insertion of uniport epidural catheters. Our study was designed to determine which insertion length minimizes insertion-related complications and the effectiveness of epidural catheter manipulation when associated with intravenous cannulation or unilateral sensory analgesia after insertion. In

practical terms, can the time spent inserting and manipulating uniport epidural catheters be minimized?

We concluded that uniport epidural catheters could be inserted either 2 or 6 cm within the epidural space based on the anticipated duration of labor.<sup>2</sup> Beilin argues that he cannot predict obstetric outcome and therefore would have concluded that all epidural catheters should be inserted 6 cm within the epidural space. I would