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Evaluation of epidural catheter tip position

To the Editor:

We were very interested by the evaluation of the Arrow Flex Tip Plus™ (Arrow International Inc., Reading MI, USA) epidural catheter tip position by Hoshi *et al.*¹ We recently evaluated 11 Arrow Flex Tip Plus™ epidural catheters in regard to a possible cephalad progression using the Tsui method for confirmation of epidural catheter placement.² With patients' (age = 58 ± 11) informed consent and with Institutional approval, we attempted to thread the catheters cephalad. The catheters were inserted between T9–10 and L2–3 by a median approach (confirmed by *x-rays*). We were unable to thread the catheters cephalad more than one vertebra in all cases. All the catheters were left 5 cm into the epidural space and all were functional. The *x-rays* showed a cephalad tip in regard to the selected interspace in seven cases, but a caudad tip in three cases and in one case the tip was at the level of the selected interspace. Of the seven catheters, 11 presented loops into the epidural space (Figure), three of them taking the catheter tip below the selected interspace.

Thus we agree with the conclusion of Hoshi *et al.* that the Flex Tip Plus™ catheters tend to stay at the level of insertion, but we suggest that they frequently loop into the epidural space when threaded 5 cm. However, are conventional catheters different?

We looked at the tip position of seven more rigid tip Portex™ (Smiths Medical, Keene, NH, USA) catheters (after dye injection) which were also threaded 5 cm cephalad and introduced at a low thoracic interspace by a median approach. Only three catheters had their tip less than one vertebra cephalad in regard to the selected interspace. Three had their tip at the

FIGURE *X-ray* showing a loop frequently observed with the Arrow Flex Tip Plus™ epidural catheter (antero-posterior view).

selected interspace and one had its tip lower than the selected interspace. Epidural loops were also observed in two cases.

Consequently, we suggest that all types of epidural catheters should not be threaded more than 5 cm into the epidural space and should be introduced at an interspace near the target point related to the type of surgery.

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REPLY:

We would like to thank Dr. Martin *et al.* for their comments on our study of Arrow Flex Tip Plus™ (Arrow International Inc., Reading, MI, USA) catheter tip positions.¹ Martin *et al.* point out this catheter tends to stay at the level of insertion, as we did before. We agree with their suggestion; epidural catheters should be introduced at an interspace near the target point related to