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Multiorifice Catheters Are Required to Maximize the Benefits of Intermittent Bolus Continuous Regional Techniques

To the Editor:

In Charous et al.'s comparison of continuous versus intermittent bolus techniques for continuous femoral nerve block,1 the authors concluded that "the study did not find evidence to support the hypothesis that varying the method of local anesthetic administration – basal infusion versus repeated bolus doses – influences continuous femoral nerve block to a clinically significant degree." However, no mention was made of the study design with respect to the use of an endhole perineural catheter rather than a multi-orifice design.

The demonstrated benefits of the intermittent bolus technique over the continuous technique (improved analgesia,2–4 reduced local anesthetic requirement,2 and perhaps better differential sensory-motor block2) are thought to be enhanced by multi-orifice flow,5,6 and thus, to maximize these benefits, a multi-orifice catheter is required. Flow from a multi-orifice catheter depends on flow rate: below 80 ml/h, multi-orifice catheters function as single-orifice catheters; above 100 ml/h, they progressively function as multi-orifice catheters.7 Therefore, a continuous-only regimen will likely only deliver single-orifice flow, whereas an intermittent bolus technique will likely deliver multi-orifice flow.8 Multi-orifice flow results in better local anesthetic spread,5,6 and it is this better spread that is thought to be responsible for the improved block characteristics with the intermittent bolus technique: improved analgesia and reduced local anesthetic consumption (for a given analgesic effect). Recent evidence also suggests that by enabling a local anesthetic dose reduction through the use of the intermittent bolus technique, a higher sensory-to-motor block ratio can be achieved (less motor block for a given analgesic effect).8 Although some studies have demonstrated benefits using the intermittent bolus technique with end-hole catheters,9 the majority have incorporated a multi-orifice design.2–4

We, therefore, do not believe that the conclusion “it is doubtful that, when using continuous femoral nerve block, varying local anesthetic administration will provide an increased sensory-to-motor block ratio” is yet warranted.

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References


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In Reply:

References 2–6 of our colleagues’ letter all involved epidural infusion,1–5 with references 2–4 suggesting analgesia is improved using repeated bolus doses compared with a simple