When the Statistics Steal the Show

To the Editor:

We read the publication by Farag et al.1 entitled “Comparison of Three Techniques for Ultrasound-guided Femoral Nerve Catheter Insertion: A Randomized, Blinded Trial” with interest and feel compelled to share our views with the readership of Anesthesiology.

The intention of this letter is not to criticize the study, but to reflect on an increasingly common problem where complex statistical analyses obscure the clinical relevance of a simple question. This large study was conducted like a National Institutes of Health clinical trial using the analytic capabilities of Ph.D.-level statisticians. We appreciated the statistical treatment of measurements taken over time. For instance, the verbal response scale was averaged for each patient using a time-weighted formula, and opioid administrations were converted to morphine equivalents and totaled. This statistical approach ideally would be followed even in studies with smaller sample sizes. We also appreciated the authors’ recognition that not all variables are normally distributed and that they took appropriate steps to account for this in their statistical analysis. Specifically, the distribution of total opioid requirement was found to be lognormal; hence, the effect of catheter insertion technique estimates “the ratio (or percent difference) of geometric means.” In addition, opioid requirement was tested in “a linear regression model of log-transformed total intravenous morphine equivalent observations as the response and randomized catheter insertion technique as the treatment of interest.”

Nonetheless, although the study aimed to answer a simple clinical question, the article is so heavily statistical that the practicing clinician may be left without any data of significance. Indeed, by advocating the use of ultrasound alone for femoral catheter placement, the authors ignore the potential safety benefits of using nerve stimulation to warn the clinician of potentially harmful needle-nerve contact and intraneural injection.5 In summary, this article demonstrates that even when meticulous data collection and advanced statistical analysis are applied to a research design with little clinical relevance, the practicing clinician may be left without any data of significance to their clinical practice.

Competing Interests

The authors declare no competing interests.

References


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Cost Effectiveness of Continuous Femoral Blocks for Total Knee Replacement

*To the Editor:* I read with great interest the article by Farag et al. Undoubtedly, the authors tried to address a very important concern related to the use of peripheral nerve blocks as a part of comprehensive acute perioperative pain management. However, it seems that they failed to recognize the specificity of the patient population they studied. Functional recovery is the main determinant for patients undergoing total knee replacement. The goal of perioperative pain management in patients undergoing total knee replacement is not to minimize pain at rest, it is to minimize pain during physical therapy while optimizing quadriceps function and minimizing the postoperative risk of falls. Effective pain control during physical therapy has been established to facilitate functional recovery, and excessive postoperative quadriceps weakness has been shown to be a significant cause of falls. Unfortunately, none of these endpoints were considered in the article by Farag et al. The authors should recognize that the ability to recover motor function after surgery and the absence of a fall represents an important determinant of the patient length of stay in the hospital, which is estimated to cost thousands of dollars versus tens of dollars as studied by Farag et al. In my institution, most patients start active physical therapy on the day of surgery and are discharged on postoperative day 2. Optimizing functional recovery hours after surgery is essential because if the patients cannot participate actively in physical therapy, their length of stay increases and with it the overall cost of the surgery.

I was also surprised by the authors’ choice of 0.1% ropivacaine at 8 ml/h because even 4 ml/h of ropivacaine 0.1% has been well established to lead to significant motor blockade. In my experience, 3 ml/h or less of ropivacaine 0.1% or bupivacaine 0.0625% seems to be optimal to preserve motor function postoperatively in most patients undergoing total knee replacement.

If the interest is on cost, consideration should be given to the cost of the local anesthetic solution when choosing a continuous block technique. In my institution, we switched from ropivacaine 0.1% to bupivacaine 0.0625% and saved $30 per bag. These cost savings are substantial for my institution, as we use more than 35,000 bags annually.

In the discussion, the authors raised another important point, for example, the time required to perform a continuous block using each technique. These data were missing from the article and would be most interesting, especially as it relates to the use of ultrasound alone versus ultrasound combined with a stimulating needle. In my experience, the difference in the time required for each technique should be insignificant, especially in the hands of an experienced regional anesthesiologist.

In conclusion, anesthesiologists should recognize the specific surgical requirement when comparing different approaches. In patients undergoing total knee replacement, optimizing pain during physical therapy, functional recovery, and minimizing the risk of falls should represent the primary concern.

**Competing Interests**
The author declares no competing interests.

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