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Ilfeld, Brian M

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## Continuous Peripheral Nerve Blocks and Alternative Regional Analgesic Modalities: Clarification Regarding Relative Superiority

### To the Editor

I would like to thank Drs Soffin and YaDeau for their discerning editorial addressing a review article I recently authored, “Continuous Peripheral Nerve Blocks: An Update of the Published Evidence and Comparison with Novel, Alternative Analgesic Modalities.”<sup>1,2</sup> I found the editorial both thoughtful and insightful but would like to clarify my article’s meaning with respect to an important statement made within the editorial: “Here, Ilfeld reviews 4 alternatives to CPNB for extended analgesia and concludes that in each case, the catheter is *likely superior* [emphasis added].”

Regarding adjuvants added to single-injection local anesthetic-based peripheral nerve blocks, the review article noted that “...no adjuvant given by any route of administration has been shown to reliably extend analgesia even one full day.” The conclusion was not that continuous peripheral nerve blockade (CPNB) was likely superior, but that: “The two techniques do not, in fact, “compete”; but, are rather *complementary*, depending upon the desired duration of block effects [emphasis added].”

Concerning liposome bupivacaine, the editorial stated that “based on the data from several RCTs, that liposomal bupivacaine is probably not even equivalent to plain bupivacaine for analgesia after TKA, much less superior to CPNB.” The review article noted that there is little evidence that liposome bupivacaine *infiltrated* into the surgical wound is *superior* to bupivacaine HCl—especially for knee arthroplasty—but this is different than claiming “liposomal bupivacaine is probably *not even equivalent* [emphasis added]” to bupivacaine HCl. Failure to demonstrate superiority is not the same as demonstrating inferiority as the editorial suggested. It is also important to differentiate liposome bupivacaine surgical wound infiltration (on-label use) and use in a peripheral nerve block (off-label use). The review article noted that “...liposome bupivacaine in a femoral nerve block produced over 72 hours of analgesia with an incomplete motor block in healthy volunteers, and demonstrated analgesic activity for up to 72 hours versus placebo in subjects following total knee arthroplasty (albeit extraordinarily minimal analgesic differences following 24 hours).” In addition, “recently-published data from one RCT strongly suggests that liposome bupivacaine within a single-injection subcostal TAP [transversus abdominis plane] block provides statistically and clinically superior analgesia to bupivacaine HCl up to 3 days following robotic assisted hysterectomy.” While further research is required to draw comparisons, there was no conclusion stated that CPNB is *likely superior* to liposome bupivacaine used as part of a peripheral nerve block.

Regarding cryoneurolysis, the editorial noted that “...this technique is still in its infancy, and there are insufficient data regarding safety, efficacy, and direct comparisons with

CPNB.” This statement is accurate for application to post-operative pain (ultrasound-guided, percutaneous cryoanalgesia has been used to treat chronic pain states for decades), but a lack of data does not suggest the *likely superiority* of CPNB. I can only speculate given the current lack of published research, but cryoneurolysis will probably be applicable to only a small subset of surgical procedures considering that it induces a complete sensory, motor, and proprioception block lasting for multiple weeks or months.<sup>3</sup> However, in cases amenable to such a block, it will most likely prove superior to CPNB due to its relative potency and duration.

Finally, concerning percutaneous peripheral nerve stimulation, the editorial stated that “...there is probably no practical advantage when the method of placement is compared with CPNB...” However, the review article specified that “Leads function optimally when inserted 0.5–3.0 cm from a target peripheral nerve, negating the importance of location within a particular facial plane.” For this reason, accurately inserting a percutaneous lead is—at least in my experience—demonstrably easier to both master and successfully achieve compared with a perineural catheter.<sup>4</sup> Similar to ultrasound-guided percutaneous cryoneurolysis, a lack of comparative data does not suggest that CPNB is *likely superior* to stimulation techniques. On the contrary, this modality theoretically induces no sensory, motor, or proprioception block; has a dramatically low risk of infection even when remaining in situ for more than 60 days; has a possible duration measured in months; and requires a stimulator small enough to allow it to be directly adhered to the patient.<sup>4</sup>

**Brian M. Ilfeld, MD, MS**

Department of Anesthesiology  
University of California San Diego  
San Diego, California  
Outcomes Research Consortium  
Cleveland, Ohio  
bilfeld@ucsd.edu

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### In Response

#### Peripheral Nerve Catheters: Better or Superior?

We appreciate Ilfeld’s kind words about our editorial. We attempted to briefly summarize his masterful review article.<sup>1</sup> In the interest of brevity, we may have violated the dictum attributed to Albert Einstein that “everything should be made as simple as possible, but not simpler.” Ilfeld<sup>1</sup> takes exception to our statement that “Ilfeld reviews 4 alternatives to CPNB [continuous peripheral nerve block] for extended analgesia and

concludes that in each case, the catheter is likely superior."<sup>2</sup> We could have used the more technical phrasings of "likely noninferior" or that "the alternative has not shown to be superior," but this type of phrasing may be confusing to nonstatisticians. We certainly do not wish to put words in anyone's mouth, so perhaps, we should have stated that "Ilfeld ... in each case, presents data that suggest CPNB is likely a better choice." We regret any misunderstanding that might have ensued.

We do think that the substance of our summary was correct. First, when one is about to perform a block for a particular patient, it is necessary to perform either a continuous block or a single injection, so the 2 techniques are, in a very valid sense, competing. Second, the (admittedly limited) data do suggest that "liposomal bupivacaine is probably not even equivalent to bupivacaine HCl."<sup>2</sup> To quote from Ilfeld's article,<sup>1</sup> "The only direct comparison to a single-injection femoral nerve block after total knee arthroplasty suggests that liposome bupivacaine infiltration provides inferior analgesia ..." Other data (from articles that Ilfeld authored or coauthored) are not encouraging; pain scores while resting at 24 and 48 hours after liposomal bupivacaine femoral nerve block for total knee arthroplasty were 3 to 4.<sup>3</sup> With a femoral nerve catheter, one would expect pain scores between 1 and 2 at those times.<sup>4</sup> Finally, we agree with Ilfeld<sup>1</sup> that cryoneurolysis may eventually prove to be superior to CPNB for a "small subset of surgical procedures," but as this statement suggests, for the majority of cases, it seems that CPNB is likely a better choice.

**Ellen M. Soffin, MD, PhD**  
**Jacques T. YaDeau, MD, PhD**  
 Department of Anesthesiology  
 Hospital for Special Surgery  
 New York, New York  
 soffine@hss.edu

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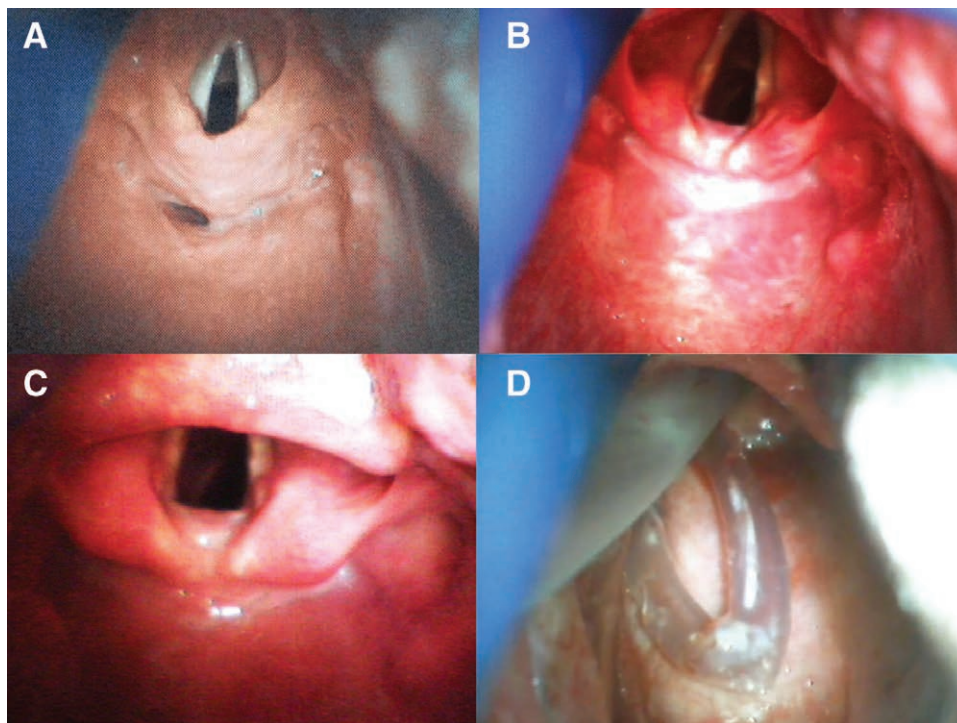
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## Cricoid Pressure, Gender, and Black Cats

### To the Editor

We have several critical points to make regarding the article by Zeidan et al.<sup>1</sup> First, neck circumference was not measured. Increased neck circumference may require higher pressure for effective cricoid pressure (CP) such that neck circumference could be a predictive factor independent of, or additive to, patient gender. Second, the anatomical model described is only realistic for videolaryngoscopy (VLS). Direct laryngoscopy aims to obtain a line of sight by alignment of oropharyngolaryngeal axis with a lifting/levering maneuver that unavoidably changes the anatomical relationship between the larynx and esophagus. CP has been evaluated (and applied for years) on such an anatomical basis. VLS is accomplished with less need for axis alignment and less force for laryngeal visualization.<sup>2</sup> As a consequence, the different laryngoesophageal relationships for VLS and standard laryngoscopy preclude



**Figure.** Esophageal views during Glidescope videolaryngoscopy. A, Optimal esophageal exposure; (B and C) absence of esophageal exposure with extremely difficult passage of the gastric tube; D, Glidescope-assisted failed gastric tube passage. In all cases no CP was applied. CP indicates cricoid pressure.