No Clinical or Electrophysiologic Evidence Proving Intraneural Injection Is Safe

To the Editor:
The article by Sala-Blanch et al.1 paints regional anesthesia into an interesting corner. On one hand, the authors demonstrate that intraneural injection happens frequently during nerve stimulator-guided blocks. On the other hand, the article does not provide convincing evidence that intraneural injection is safe. Neuropathy after peripheral nerve block is uncommon and therefore difficult to study from an epidemiologic perspective. For this study, the unbiased estimate of the true event rate for nerve injury after intraneural injection is 0 percent. However, because of the small sample size (n = 16), the upper bound of the 95% CI on this event rate is only 20% (Clopper–Pearson method).

The title of the article, "No Clinical or Electrophysiologic Evidence of Nerve Injury After Intraneural Injection During Sciatic Popliteal Block," is misleading when reported in such a limited number of patients. It provides tacit approval of a practice that may be the cause (albeit rarely) of complications that are devastating to the patient. A large prospective trial of intraneural injections in humans is needed to quantify the risk of this practice. However, such a study is difficult to justify because animal studies already demonstrate that needle trauma alone can cause nerve injury.2,3 Even animal studies showing no histologic or electrophysiologic evidence of injury after intraneural injection4 do not address the most common symptoms of injury, which are paresthesia, dyesthesia, and pain. The majority of these symptoms occur without electrophysiologic abnormalities.5

There is a striking paradox in this study. The investigators unknowingly performed intraneural injection in 94% of patients with the nerve stimulator. Meanwhile, their colleagues (in the same study) used ultrasound to assess local anesthetic distribution with such precision as to "identify hypoechoic aliquots of fluid between nerve fascicles."1 Few reports have illustrated the gap in capability between these two technologies so well.

The truth is we do not know how often intraneural injection leads to nerve injury. However, it is reasonable to assume that piercing and injecting nerves is not therapeutic in any way. Instead of trying to convince ourselves that nerve injection and needle trauma are not so bad, why not just stop doing it? After all, we have the technology.

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References

Incidence of Subclinical Neuropathy after Intraneural Injection

To the Editor:
We read with interest the recent article by Sala-Blanch et al.,1 in which the authors prospectively evaluated the frequency of subclinical neurologic injury following nerve-stimulator-guided low-pressure intraneural injection of local anesthetic and radio-opaque contrast for a single-shot sciatic popliteal block in 16 patients undergoing hallux valgus repair. Intraneural injection was confirmed by ultrasound and computed tomography scan imaging. Patients underwent physical examination and conventional electrophysiologic studies both preoperatively and postoperatively at weeks 1 and 4 to detect clinical and subclinical nerve injury, respectively. None of the 16 patients demonstrated evidence of clinical or subclinical nerve injury. Based on these results, the authors cautiously concluded that low-pressure intraneural injection within the sciatic nerve at the popliteal level may not result in clinical or subclinical nerve injury. Despite material differences in methodology, Sala-Blanch et al.’s findings are in stark contrast to a recent publication that reported the frequency of subclinical nerve injury after nerve-stimulator-guided continuous femoral nerve block in young adults undergoing anterior cruciate ligament repair to be 24% at 4 weeks, based on clinical examination and conventional electrophysiologic study2; all patients recovered at 6 months.

Therefore, we believe that some additional information is necessary in order for the readership, ourselves included, to meaningfully interpret the clinical relevance of the present results. First, the authors defined electrophysiologic nerve injury as “a change in latency (more than 120%) or in amplitude and