

# Delayed Neurological Recovery After Ultrasound-Guided Brachial Plexus Block: A Case Report [Letter]

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## Dear editor

With great interest, we have read the article published by Shrestha et al, where the authors have presented a healthy patient who had prolonged neurological recovery after brachial plexus block for open reduction and internal fixation of left forearm bone fractures.<sup>1</sup>

We would like to express our thoughts and concerns regarding the prolonged neurological recovery after brachial plexus block for orthopedic surgery on the forearm. Firstly, although the authors mentioned prolonged neurological recovery possibly being due to local anesthetics, they forgot to mention other possible causes of perioperative nerve injuries, like preexisting peripheral neuropathy, profound hypotension, hypoxemia, hypothermia, morbid obesity or underweight, electrolyte imbalance, diabetes, current tobacco use and procedural risk factors such as the duration of surgery and patient position.<sup>2</sup> We do not know the weight of the patient, and extremes of body habitus can lead to nerve injury, especially if a tourniquet is used. Since the tourniquet was at midarm and was used for close to 2 hours, compression nerve injury from the tourniquet may well be the cause of the prolonged neurological recovery. Bickler et al stated that 45–60 minutes of compression of 250 mmHg over the nerve is required to reversibly block nerve conduction in the segment directly beneath the nerve.<sup>3</sup> Secondly, even though the authors mentioned a nerve conduction study being carried out on the patient, it seems like it was done too early in the course of the disease (day four). While an early conduction study may provide useful information, it can take around 3–4 weeks for the electrophysiological changes of a nerve injury to evolve fully in a nerve conduction study.<sup>4</sup> We wonder whether the authors thought of repeating the nerve conduction study. Thirdly, the conclusion made by the authors that cumulative toxicity from two different local anesthetics may have been a factor seems to be weak as the dose of local anesthetic used for the block was quite low (8 mL of 0.5% bupivacaine and 5 mL of 2% lidocaine). However, a tiny amount of local anesthetic (0.5–1 mL) is sufficient to cause injury if injected into the fascicle, causing direct needle injury and trauma.<sup>5</sup>

Peripheral nerve injury due to anesthesia is a very serious complication which can be encountered with both regional and general anesthesia. Two ASA closed-claim

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analyses conducted a decade apart reveal that anesthesia-related nerve injuries are the third most common cause of anesthesia-related litigation claims.<sup>6</sup>

## Disclosure

The authors report no conflicts of interest in this communication.

## References

1. Shreshta N, Karki B, Koirala M. Delayed neurological recovery after ultrasound-guided brachial plexus block: a case report. *Local Reg Anesth.* 2020;13:33–35.
2. Hewson DW, Bedforth NM, Hardman JG. Peripheral nerve injury arising in anaesthesia practice. *Anaesthesia.* 2018;73:51–60. doi:10.1111/anae.14140
3. Bickler PE, Schapera A, Bainton CR. Acute radial nerve injury from use of an automatic blood pressure monitor. *Anesthesiology.* 1990;73:186–188. doi:10.1097/0000542-199007000-00030
4. Michael J. Aminoff, electrophysiologic testing for the diagnosis of peripheral nerve injuries. *Anesthesiology.* 2004;100:1298–1303. doi:10.1097/0000542-200405000-00034
5. Barrington M, Brull R, Reina M, et al. Complications and Prevention of Neurologic Injuries with Peripheral Nerve Blocks. Available from: <https://www.nysora.com/foundations-of-regional-anesthesia/complications/complications-prevention-neurologic-injury-peripheral-nerve-blocks/>. Accessed May 22, 2020.
6. Abdul L, Bhatia K. Perioperative peripheral nerve injuries. *Continuing Education in Anesthesia, Critical Care & Pain.* 2012;12(1):38–42.

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