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CORR Insights®: Does Brachial Plexus Blockade Result in Improved Pain Scores After Distal Radius Fracture Fixation? A Randomized TrialStephen Alan Kennedy MD, FRCSC **Where Are We Now?**

Regional anesthesia provides multiple benefits in terms of perioperative pain management [3, 4]. In upper extremity surgery, brachial plexus blocks result in reduced systemic anesthetic

requirements, lower perioperative opioid consumption, less nausea, and shorter postoperative stays [1, 3, 4]. Beyond the hospital, however, the benefits in regard to pain management are less clear, and surgeons may find it difficult to counsel patients about what to expect in the hours and days after the regional anesthetic wears off.

Galos and colleagues have performed a randomized controlled trial to evaluate the pain experience for patients undergoing operative repair of distal radius fractures, and their findings supports the concept of “rebound pain” after discharge. Although patients with brachial plexus block may have little if any pain during and immediately after the procedure, 12 hours to 24 hours later the block wears off and their pain is greater than that for the general anesthetic group. The

pain at this point is similar to the immediate postoperative pain for patients who underwent general anesthesia. Pain scores are documented at 2, 4, 6, 24, 48, and 72 hours, as well as at 2 weeks postoperatively, providing valuable information to providers counseling patients prior to distal radius fracture surgery.

Where Do We Need To Go?

One might wonder on the basis of this study whether brachial plexus blockade should be avoided for patients undergoing distal radius fracture fixation. It seems to only delay the pain experience, with the greatest pain outside the healthcare facility, where patients have less care and support. However, brachial plexus blockade does have benefits in the immediate postoperative recovery, and research by Egol and colleagues [3] suggests that regional anesthesia may have long-term benefits regarding functional outcome after distal radius fracture repair. It remains unclear to what degree some of this rebound pain

This CORR Insights® is a commentary on the article “Does Brachial Plexus Blockade Result in Improved Pain Scores After Distal Radius Fracture Fixation? A Randomized Trial” by Galos and colleagues available at: DOI: [10.1007/s11999-016-4735-1](https://doi.org/10.1007/s11999-016-4735-1).

The author certifies that he, or a member of his immediate family, has no funding or commercial associations (eg, consultancies, stock ownership, equity interest, patent/licensing arrangements, etc.) that might pose a conflict of interest in connection with the submitted article.

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This *CORR Insights*® comment refers to the article available at DOI: [10.1007/s11999-016-4735-1](https://doi.org/10.1007/s11999-016-4735-1).

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phenomenon could be mitigated by “staying ahead of the pain” with anticipatory dosing of multimodal analgesics, counseling, and/or other adjuvant therapies to aid the transition of the block wearing off. Modifications to brachial plexus blockade, such as longer acting anesthetics, adjuvant medications, or indwelling peripheral nerve catheter are also alternatives worthy of further study to better allow for the immediate benefits of regional anesthesia, and reduction of pain in the ensuing 48 hours to 72 hours.

There is an opioid epidemic in the United States and other developed countries, with recent data indicating that deaths from opioids have exceeded that of motor vehicle collisions for multiple population demographics [2, 5]. One of the greatest source of opioids remains abuse of unused medications prescribed by health care providers [2, 5]. Better understanding pain after surgery and maximizing use of non-narcotic treatments will go a long way toward reducing the pain experience for our patients and improving the health of the population.

How Do We Get There?

Galos and colleagues terminated their study early because they noted clinically important differences in the pain experience between participants in

each arm of the study, and it was felt that it was no longer ethical to continue. Although the point could be debated, it does expose some of the limitations of randomized controlled trials, and raises the question whether randomized controlled trials are the best methodology for the next study on optimization of pain control for distal radius fracture surgery. In the near future, well designed prospective outcome databases may be an alternative to best understand the determinants of the pain experience, while still allowing for informed decision making.

We need to combine both short- and long-term outcome studies to best counsel patients about which option(s) they should choose. Galos and colleagues obtained pain scores from study participants at six time points within the first 72 hours, and found that brachial plexus block was not significantly better than general anesthesia for pain control. Egol and colleagues, however, used a database to study clinical and radiographic outcomes at 3 months, 6 months, and a year, and found that regional block improved pain, digit motion, and patient-reported outcomes [3]. Future prospective databases and randomized studies will need to assess outcomes for both time periods, and document pertinent injury and patient factors that can influence the outcome. A prospective database would allow for

identification and prioritization of injury and patient factors, and further randomized studies will then help minimize confounding and directly compare the potential optimal interventions. Combining both will provide the highest level of evidence.

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