Single versus Continuous Nerve Block for Extremity Fractures: A Comparative Study

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Background/Purpose: Peripheral nerve blocks are frequently used in extremity fracture surgery for controlling intraoperative and postoperative pain. However, patients have reported a rise in rebound pain as the anesthetic wears off. Continuous nerve blocks have been utilized to help decrease the amount of rebound pain and decrease postoperative narcotic analgesia. The purpose of this study was to compare the efficacy of the continuous nerve block as well as the single shot nerve block in distal radius fractures as well as ankle fracture surgeries. Additionally, the continuous nerve block was compared to single nerve block for both fracture types together to assess overall efficacy of the continuous nerve block

Methods: There were 50 patients undergoing operative fixation of ankle fractures and 40 patients undergoing operative fixation of distal radius fractures that were reviewed after being randomized to receive a single nerve block (n = 59) or a continuous nerve block with a pump (n = 41). Patients with distal radius fractures received an infraclavicular block, and ankle fractures received a popliteal-sciatic block. Postoperative pain scores as well as number of pain pills were recorded at 8, 12, 24, 48, and 72 hours postoperatively. Pain scores and number of pain pills taken at each of these time points were compared across extremity fracture groups within the single and continuous nerve block groups. Overall pain scores and number of pain pills were compared across single and continuous block groups for both extremity fracture groups combined.

Results: When comparing the continuous nerve block between ankle fractures and distal radius fractures, the distal radius group had significantly less pain pills at 48 hours postoperatively (median number of pain pills: 3 vs 5, P = 0.019). For the single nerve block groups, the distal radius group was found to have significantly less pain compared to ankles at the 12-hour postoperative period (median pain score: 6.0 vs 8.0, P =0.039) and also fewer pain pills at the 24-hour (median number of pain pills 2 vs 5, P = 0.002) and 48-hour (4 vs 6, P = 0.001) postoperative periods. When comparing the continuous block for upper and lower extremity fractures with the single nerve block, the continuous nerve block group had overall decreased pain at all time points but was statistically significant at the 12-hour postoperative period (median pain score: 4.5 vs 7.0, P = 0.041). Furthermore, the same trend was noted for the amount of pain pills taken postoperatively and was statistically significant at the 24-hour period (median number of pain pills: 3 vs 2, P = 0.014).

Conclusion: The distal radius group required less pain medication and had lower pain scores with both the single nerve block as well as continuous nerve block infusion groups. Furthermore, it was also noted that use of a continuous infusion pump for postoperative pain in ankle and distal radius fracture cases combined has been shown to decrease rebound pain at 24 hours when compared to a single nerve block.