

The Long-Term Effect of Intraoperative Hip Fracture Injections (HiFI) on Function and Patient Reported Outcomes: A Randomized Controlled Trial

*Rioka Chinyere Ihejirika-Lomedico, MD; Nathan August Lorentz; Sara Jo Solasz, BA; Abhishek Ganta, MD; Nirmal C. Tejwani, MD, FRCS; Sanjit R. Konda, MD; Kenneth A. Egol, MD; Philipp Leucht, MD
NYU, New York, New York, UNITED STATES*

Purpose: Pain control is recognized as one of the single most important factors that impacts a patient's hospital stay and outcomes following hip fracture fixation. This randomized, single-blind trial studied the effects of a multimodal pain injection given to the fracture hematoma and operative site on inpatient and outpatient pain and functional outcomes.

Methods: This study included patients treated with open or percutaneous operative fixation of hip fractures. Patients were randomized to receive either a hip fracture injection (HiFI) as a hematoma block and peri-incisional injection (treatment group) or no injection (control group). Subjects in the HiFI group received an injection of bupivacaine, morphine sulfate, and ketorolac under fluoroscopic guidance into the fracture site and bupivacaine into the subcutaneous tissue surrounding the surgical incisions. Patients were blinded to the treatment. Primary outcome measures included inpatient pain, American Pain Society Patient Outcome Questionnaire (APS-POQ), ambulation distance, and length of stay. Secondary outcome measures included outpatient APS-POQ and Short Musculoskeletal Function Assessment (SMFA) at 6 weeks after surgery.

Results: Of the 202 patients randomized in the study, 82 were in the treatment group and 120 in the control group. Patients in the HiFI group had a significant reduction in pain compared to the control group on postoperative day (POD) zero, $P < 0.01$. Patients in the control group had a significantly harder time falling asleep, staying asleep, and increased drowsiness compared to those in the HiFI group on POD 1, $P < 0.01$. Patient ambulation distance was significantly increased on POD 2 and POD 3 in the HiFI group compared to the control group, $P < 0.01$ and $P < 0.05$. Patients were more likely to be discharged home versus subacute rehabilitation in the HiFI group, likelihood ratio = 1.4. There was no significant difference in length of stay. At 6 weeks postoperatively, patients in the treatment group reported significantly less pain, better ambulatory function, less insomnia, less depression, and better satisfaction than the control group as measured by the APS-POQ. The SMFA bothersome index was also significantly lower for patients in the HiFI group compared to the control group, $P < 0.05$.

Conclusion: This study demonstrates the impact of perioperative pain control. The HiFI protocol not only improved pain management and ambulation while in the hospital, it led to durable changes in patients' overall pain and health-related quality of life after discharge. The HiFI protocol should be considered as a standard of care for those undergoing hip fracture fixation surgery.