Liposomal Bupivacaine for Postoperative Pain Control in Fragility Intertrochanteric Femur Fractures

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Purpose: The purpose of this study is to determine whether intraoperative liposomal bupivacaine (1) reduces postoperative opioid requirements, (2) reduces postoperative pain scores, and (3) reduces postoperative length of stay in patients with fragility intertrochanteric femur fractures.

Methods: IRB approval was obtained for a retrospective chart review. A retrospective chart review was conducted identifying patients admitted to 1 of 2 hospitals with a diagnosis of intertrochanteric femur fracture beginning June 2016 when the senior authors began using liposomal bupivacaine intraoperatively. Inclusion criteria included patients sustaining a low-energy intertrochanteric femur fracture treated with an intramedullary nail implant. Exclusion criteria included polytrauma, dementia, delirium, or a chronic pain diagnosis or fixation with a dynamic hip screw. A retrospective chart review was then performed retrospectively identifying patients treated without liposomal bupivacaine for comparison. Primary end points were oral mean morphine equivalents (MME) received postoperatively and mean NRS (numerical pain rating score) postoperatively. Secondary end points included postoperative length of stay, operative time, and home discharge.

Results: Retrospective chart review identified 46 patients who received intraoperative liposomal bupivacaine and 56 patients who did not. Demographic data including age, sex, and American Society of Anesthesiologist (ASA) level were similar between groups. The liposomal bupivacaine group received significantly more MME in the first 24 hours after surgery compared to the non-liposomal bupivacaine group (0.34 mg/h/kg vs 0.92 mg/h/kg, $P = 0.04$). NRS was also significantly less in the first 24 hours (2.89 vs 5.13, $P = 0.04$). Both oral morphine equivalents and NRS were similar at the 36-hour mark (1.18 mg/h/kg vs 1.37 mg/h/kg, $P = 0.27$; 3.61 vs 5.51, $P = 0.34$). The liposomal bupivacaine group had reduced length of stay (3.2 days vs 4.8, $P = 0.003$), more discharges home (7 vs 2, $P = 0.001$), and a longer operative time (73.4 min vs 67.2 min, $P = 0.004$).

Conclusion: Intraoperative liposomal bupivacaine use reduced opioid use and postoperative pain for the first 24 hours following fixation of intertrochanteric femur fractures. Significant reductions in postoperative length of stay and more discharges to home may present an opportunity for cost savings.