

## Δ A Multicenter Randomized Trial Evaluating Liposomal Bupivacaine for Decrease of Narcotic Use in Hip Fractures

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**Purpose:** Decreasing opioid use in pain control for hip fractures is paramount to preventing complications associated with opioids such as delirium, urinary retention, and falls. Liposomal bupivacaine is a local anesthetic that can last in tissues for up to 72 hours. Use of liposomal bupivacaine in the treatment of pain after fractures could improve care by decreasing the need for opioids thus decreasing opioid-related complications. The purpose of this trial was to assess the effectiveness of liposomal bupivacaine in the treatment of hip fractures. We hypothesized that use of liposomal bupivacaine would result in decreased opioid usage and decreased pain.

**Methods:** This study was a phase III, prospective randomized trial, conducted at 2 Level-I trauma centers. Patients aged 55 years and older having sustained a hip fracture treated with either cephalomedullary nail, sliding hip screw, or hemiarthroplasty were included. Patients were block randomized to receive either an injection of normal saline (placebo) or liposomal bupivacaine at the surgical/fracture site according to manufacturer guidelines. Patients were treated with standard postoperative pain protocol. The primary outcome was total morphine equivalents over 24, 48, and 72 hours. Secondary measures included average visual analog pain scale (VAS) and Confusion Assessment Method (CAM) scores. Target enrollment was 50 patients after power analysis.

**Results:** 55 patients were enrolled and 53 were included in the analysis. Average age was 76 years (standard deviation [SD]: 1.23), 69.8% female. Total morphine milligram equivalents for 24 hours were 49.75 placebo (P) versus 39.6 liposomal bupivacaine (TX) (95% CI [confidence interval] 37.43-62.07, 20.79-8.40; P = 0.35). For 48 hours, they were P: 62.03 versus TX: 49.88 (95% CI 45.04-79.02, 28.31-71.44; P = 0.36). At 72 hours, they were P: 13.43 versus TX: 8.13 (95% CI -2.05 to 28.91, -2.34 to 18.59; P = 0.50). For total, P: 65.39 versus TX: 52.48 (95% CI 45.68-85.10, 30.21-74.75; P = 0.37). 24-hour VAS scores were P: 3.9 versus TX: 2.81 (95% CI 3.03-4.77, 1.90-3.71; P = 0.08). 48-hour VAS scores were P: 3.74 versus TX: 3.44 (95% CI 2.98-4.51, 2.45-4.42; P = 0.61). 72-hour scores were P: 3.32 versus TX: 2.97 (95% CI 2.21-4.42, 2.06-3.88; P = 0.63). There was no difference in CAM scores at all time points (P > 0.05).

**Conclusion:** This is the first randomized trial to investigate the use of liposomal bupivacaine in geriatric hip fractures. Although we demonstrated decreased narcotic use and VAS pain at all time points, this was not statistically significant. Large variations in pain medication requirement likely account for this finding. Liposomal bupivacaine may decrease narcotic requirement and likely improve pain scores. Future larger trials informed by this trial may demonstrate a significant difference, but likely a small effect size with minimal clinical significance.

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See the meeting app for complete listing of authors' disclosure information.