Long-Acting Local Anesthetic in Ankle Fractures Requiring ORIF Reduces Postoperative Narcotic Use: A Randomized Trial

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Purpose: Our objective was to determine the efficacy of liposomal bupivacaine with bupivacaine compared to placebo for postoperative pain control in patients undergoing operative fixation of ankle fractures.

Methods: After IRB approval, 50 patients with acute ankle fractures (OTA 44A-C) requiring operative fixation that met inclusion criteria were identified at a Level I trauma center. Patients were randomly assigned to one of two groups, standard of care (general anesthesia alone) or local intraoperative liposomal bupivacaine with bupivacaine (interventional) and remained blinded to study arm. Postanesthesia care unit (PACU) pain medications administered and pain according to visual analog scale (VAS) were recorded. Patients were discharged on oxycodone/acetaminophen (Percocet) 5/325 mg for pain control. Pain levels and pain medications taken were recorded at postoperative time points of 4, 24, 48, and 72 hours by a trained researcher. Patients followed up in the operative surgeon's office until union and then continued to be followed until maximal medical improvement. At each follow-up visit, patients were given a short questionnaire regarding satisfaction with pain control. Pain scores were again recorded using VAS at these visits.

Results: 23 males and 27 females (mean age = 45 ± 16 years) were enrolled and obtained adequate follow-up. 26 patients were randomized to the control group and 24 to the interventional group, with no statistically significant differences between groups with regards to severity of injury and patient demographics including gender, age, and body mass index (BMI). Pain scores were lower in the interventional group versus control at each time point assessed, achieving significance for pain levels at 4 hours (3.4 vs 5.8, P = 0.01). Percocet ingestion at 4 hours and 48 hours postoperatively were significantly lower in the interventional group (0.35 vs 1.1, P = 0.004, and 1.5 vs 2.6, P = 0.007, respectively) with no significant differences in Percocet taken postoperatively at all other time points assessed (P = 0.243, P = 0.606). There was no significant difference regarding PACU morphine use between the control group and the interventional group (0.74 doses vs 0.45 doses, P = 0.301). There was no difference in pain score and total pain medication used between postoperative day three and postoperative day fourteen (P = 0.684, P = 0.378, respectively). The overall satisfaction with pain control was not statistically different between the two groups (P = 0.467).

Conclusion: Local intraoperative infiltration of liposomal bupivacaine with bupivacaine for ankle fractures requiring open reduction and internal fixation (ORIF) affords improved pain relief in the immediate postoperative period resulting in a reduction in Percocet ingestion, with resultant effects seen up to two days postoperatively. Interestingly, this reduction did not result in a reduced length of PACU stay, reflecting the comprehensive criterion composing PACU discharge. Continued investigation of this drug for use with extremity fractures is warranted.