

A Prospective Randomized Controlled Trial Comparing Single-Shot Liposomal Bupivacaine vs Liposomal Bupivacaine Combined with Dexamethasone for Foot and Ankle Procedures

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INTRODUCTION: A 2020 study evaluated the addition of dexamethasone to popliteal nerve blocks but failed to demonstrate a significant difference due to being underpowered, highlighting the need for further investigation. This study evaluates the effectiveness of liposomal bupivacaine alone versus in combination with dexamethasone in popliteal and saphenous nerve blocks for foot and ankle surgeries. The primary aim is to assess whether adding dexamethasone reduces postoperative narcotic use and prolongs pain relief. Additionally, the study introduces a novel ultrasound technique, the "hummingbird" sign, for improved saphenous block localization.

METHODS: This prospective, randomized controlled trial included patients undergoing foot and ankle surgeries, all performed by the same surgeon and anesthesiologist. Participants were randomly assigned to two groups: Group 1 received 20 mL liposomal bupivacaine and 10 mL 0.75% bupivacaine, while Group 2 received 20 mL liposomal bupivacaine, 10 mg preservative-free dexamethasone, and 10 mL 0.75% bupivacaine. Patients were surveyed for pain, opioid use, and other analgesic medications (including Toradol, acetaminophen, and ketorolac) at 7 days post-surgery, with a final survey at 14 days. The study aimed to compare the effects of these two formulations on pain relief and opioid consumption.

RESULTS: Preliminary analysis of 111 patients suggests that the addition of dexamethasone is associated with a significantly longer duration of nerve block at POD 7 (6.24 vs. 5.20 days, $p = 0.005$) and POD 14 (7.95 vs. 5.39 days, $p < 0.001$). Ketorolac use was significantly lower in the dexamethasone group by POD 14 (0.41 vs. 1.35, $p = 0.026$). Pain scores and opioid use were low across both groups with no statistically significant differences. A higher incidence of altered sensation was reported in the dexamethasone group at POD 7 (81.1% vs. 50.0%, $p = 0.009$).

DISCUSSION AND CONCLUSION: Preliminary results suggest that adding dexamethasone to liposomal bupivacaine prolongs the duration of nerve block and is associated with reduced ketorolac use by POD 14. No significant differences were observed in pain scores or opioid consumption between groups. The higher incidence of altered sensation seen in the dexamethasone group may reflect an extended analgesic effect. These early findings support the potential role of dexamethasone as an adjuvant in regional anesthesia and warrant continued investigation as data collection progresses.