Is there an increased risk of venous thromboembolism in active lithium users undergoing major orthopaedic surgery

Purpose:
Lithium is a common medication for mood stabilization particularly in bipolar disorder. There's some evidence that lithium may have a positive effect on fracture healing with a randomized controlled trial currently underway investigating this. But, there is also data suggesting that lithium may increase the risk of venous thromboembolic events (VTEs), particularly concerning for orthopaedic surgery patients who are already at an elevated risk of VTE. The purpose of this study was to determine if lithium use at the time of major orthopedic surgery increases the risk of VTE.

Methods:
After institutional review board approval, patients treated with lithium undergoing major orthopedic surgery (>45 min) involving hip, pelvis, or leg at a single level one trauma were identified. Patients were excluded if they were less than 18 years old. Patients with perioperative lithium use, defined as lithium use at the time of surgery, were compared to a control group of patients with a history of lithium use. VTE risk for each patient was quantified using the Caprini score: A score of 5 or more is considered to be high risk. The two groups were compared in terms of demographics, operative characteristics, and VTE rate.

Results:
A total of 158 patients with lithium use undergoing a major orthopedic surgery on the hip, pelvis, or leg were identified; 92 surgeries were excluded for not involving these regions and 10 procedures were excluded for having another included procedure within 3 months prior, leaving 56 surgeries in 42 patients. Median age was 44.0 years (IQR (30.7 to 58.0) and 69.6% (n=39) were males. There were 18 surgeries in patients with active lithium use and 38 surgeries in patients with a history of lithium use. The two groups did not differ in terms of age, gender, BMI, tobacco use, Caprini score, surgical location, or operation type. There were no significant differences between the active lithium group and the control group, however the active lithium use group had a non-statistically significant trend of being less likely to have a history of prior VTE (0.0% (0/18) vs. 15.8% (6/38), p=0.16). There was no difference in the rate of postoperative VTEs between patients with active lithium use and patients with a history of lithium use, however there was a non-statistically significant trend for more VTEs in patients with active lithium use (11.5% (2/18) vs. 0.0% (0/38), p=0.09).

Conclusion:
Patients with active lithium use, compared to a control group with a history of lithium use, undergoing major orthopaedic surgeries, had a trend of having more postoperative VTEs. As lithium use has been demonstrated to increase the rate of VTEs in non-surgical patients, this data suggests that it may also be true for patients undergoing orthopaedic surgery. A larger cohort of patients is needed to further evaluate this trend,

however. Studies investigating the use of lithium's effects on fracture healing should take these findings into account as these patients may be at increased risk of VTE.