Multi-Modal Pain Management after Outpatient Orthopaedic Hand Surgery: A Prospective Randomized Trial

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INTRODUCTION:

Prior studies in orthopedics have demonstrated that multi-modal postoperative pain regimens provide adequate pain coverage for patients and reduce opioid consumption. However, the most effective and patient-preferred pain regimen remains unclear. This prospective, randomized study investigates the efficacy of a multi-modal postoperative pain regimen compared to a traditional opioid-only pain regimen following elective outpatient orthopedic hand and wrist surgery under general or regional anesthesia.

METHODS: From 10/14/2021 to 3/2/2022, all patients undergoing outpatient upper extremity surgery performed by 2 board certified fellowship trained orthopedic hand and upper extremity surgeons at one institution were recruited. Patients undergoing surgery under local anesthesia only were excluded. Patients were randomized into either a study or control group; the study group received a multimodal postoperative regimen consisting of oral Acetaminophen and Naproxen to be taken regularly and 5 pills of 5mg of Oxycodone to be taken as needed, while the control group received a post-operative prescription of only 10 pills of 5mg of Oxycodone to be taken as needed. Postoperatively, patients recorded their daily pain level via a 10-point numeric scale, daily medication usage, overall satisfaction with their pain management regimen, and any adverse events. Primary outcomes include the average overall pain score per group, average number of opioid pills taken, and patient satisfaction. Categorical data was analyzed with Chi-Square or Fisher's Exact tests. Continuous data was analyzed with independent t-tests and ANOVA. Statistical significance was set at $p < 0.05$.

RESULTS:

Of 108 patients enrolled, 52 were in the control group and 56 were in the study group (average age 59, range 18-78). Study and control group patients did not differ significantly between daily average pain scores (3.419 vs 3.721, $p = 0.437$, Figure 1) or daily worst pain scores (4.45 vs 4.39, $p = 0.75$). However, study group patients reported significantly fewer average daily oxycodone pill intake than control group patients (0.79 vs. 0.24, $p = 0.0036$, Figure 2). Multi-modal regimen patients reported more satisfaction with their post-operative pain control than control regimen patient's ($p = 0.022$), and were less likely to require a refill on their medications ($p = 0.048$).

DISCUSSION AND CONCLUSION: This study revealed that a multi-modal pain regimen after hand and wrist surgery reduces opioid usage postoperatively and has higher patient satisfaction rates in comparison to traditional opioid-only regimens. These findings are strengthened by the fact there were no differences in daily pain scores or adverse events between groups. These findings suggest a potential alternative to opioid-only regimens for postoperative pain management in orthopedic surgery patients.