

Opioid-Sparing Pain Management Protocol following Shoulder Arthroplasty Results in Less Opioid Consumption and Higher Satisfaction: A Prospective, Randomized Control Trial

Tyler James Brolin¹, Caleb Andrew Jones², Jeffrey Alan Murphy, Robert Renn Eason, Myles Joyce, David Bernholt, Frederick M Azar³, Thomas Ward Throckmorton⁴

¹Univ of Tn-Campbell Clinic, ²University of Tennessee Health Science Center-Campbell Clinic, ³UT-Campbell Clinic, ⁴Campbell Clinic

INTRODUCTION:

Recently, the opioid epidemic has been the center of focus for healthcare providers and governmental agencies due to rising rates of opioid abuse, opioid-related fatalities, and overall economic burden of treating the opioid epidemic. As orthopaedic surgeons account for 7.7% of all dispensed opioid prescriptions within the United States, surgeons have migrated toward multimodal pain management strategies in controlling postoperative pain as well as limiting opioid use and opioid related complications. Currently, there remains no clear consensus on the ideal pain management strategy following shoulder arthroplasty and the vast majority are based around opioid-driven protocols.

METHODS: Patients undergoing primary anatomic or reverse total shoulder arthroplasty were prospectively enrolled and randomized into an opioid-sparing (OS) or a traditional opioid-based (OB) postoperative pain protocol. Both groups received opioid education, a periarticular injection with liposomal bupivacaine, and multimodal management including acetaminophen, celecoxib, and gabapentin. Patients in the OB group were given a prescription of 40 oxycodone tablets and standard icing whereas the OS group received ketorolac, continuous cryotherapy, and a prescription of 10 oxycodone tablets for rescue only. Patients were queried regarding their levels of pain and opioid consumption at days 1-7, 2-weeks, 6-weeks, and 12-weeks postoperatively. Patient satisfaction with pain management was recorded at 1-week, 2-week, 6-week, and 12-week timepoints. Range of motion (ROM), ASES score, and SANE score were assessed preoperatively and at 12 weeks postoperatively. Complications, readmissions, and reoperations were prospectively recorded.

RESULTS: A total of 78 patients were enrolled. No difference in VAS pain scores were seen at any timepoint between OB and OS groups. OS group consumed less oral morphine equivalents (OME) at all timepoints from inpatient hospitalization to 12-weeks postoperatively, ($p < 0.05$). Total OME consumption was reduced by 213% for OS versus OB group (112 vs. 239; $p < 0.0001$). OS group consumed fewer opioid pain pills at all time points from day 1 to 12-weeks postoperatively, ($p < 0.05$). A 395% reduction in number of opioid pain pills consumed in first 12 weeks postoperatively was seen in OS versus OB group (4.3 vs. 17.0; $p < 0.0001$). Significantly more patients in OS group were completely off opioids by 2 weeks postoperatively, (86.1% vs. 58.5%; $p = 0.011$) and 94.4% of OS group were off opioids by 6 weeks postoperatively. The OS group were more satisfied with pain management at 1-week and 6-week timepoints ($p = 0.05$). No difference in ROM, change from baseline in ASES or SANE scores, complications, readmissions, or reoperations were seen between groups.

DISCUSSION AND CONCLUSION: The findings of this study determined the adoption of an opioid-sparing postoperative pain management protocol following shoulder arthroplasty results in a nearly 4-fold reduction in opioid pain pill consumption and earlier cessation of opioids. In addition, patients reported higher satisfaction with their pain management protocol.