Opioid Sparing Anesthesia for Adult Spinal Deformity Surgery Reduces Postoperative Pain, Length of Stay, ICU Stay, Opioid Consumption, and Opioid-Related Complications: A Propensity Matched Analysis

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INTRODUCTION:
The US opioid crisis highlights the dire need to reduce opioid exposure with alternative approaches. Prior studies report that 25% of opioid naive patients are still on opioids two years after spinal fusion surgery. Currently, opioids are a primary component of anesthesia during spinal surgery. We developed an opioid sparing anesthesia (OSA) protocol for adult spinal deformity (ASD) surgery to mitigate opioid exposure.
METHODS: Opioid naive patients undergoing > 5 level lumbar fusion for were identified. Patients receiving OSA were propensity-matched to non-OSA patients based on sex, smoking status, BMI, ASA grade, surgical invasiveness, number of levels fused, and revision vs. primary procedure. The OSA protocol includes a combination of IV propofol, lidocaine, ketamine, magnesium, dexmedetomidine, and esmolol as needed. A standard opioid escalation protocol was used postoperatively.
RESULTS:
Of 45 OSA patients meeting inclusion criteria, 43 were successfully propensity matched to 43 non-OSA patients. There were no differences in baseline demographic or surgical parameters. Opioid consumption was reduced intraoperatively (3.6 vs. 53.2MME, p=0.000), on POD 1 (67.4 vs. 111.6MME, p=0.030), and each POD with decreased total consumption (241.3 vs. 453.9MME, p=0.022). OSA patients had reduced opioid-related complications (1 vs. 9, p=0.015) and less patients required blood transfusion (1 vs. 28, p=0.000) despite similar EBL (570 vs. 692cc, p=0.294). Emergence time (17.4 vs. 14.3min, p=0.374) and PACU time (113.8 vs. 142.6min, p=0.077) was similar between cohorts. There was a shorter LOS for OSA patients (4.3 vs. 6.2 days, p=0.009) and less ICU admissions (4 vs. 14, p=0.015). Pain score on transfer in (4.6 vs. 7.6, p=0.000) and out (4.2 vs. 6.2, p=0.002) of PACU was lower for OSA patients as well.
DISCUSSION AND CONCLUSION: Our results show that OSA in ASD surgery improves immediate postoperative recovery kinetics by reducing the need for ICU, blood transfusion, pain scores, and LOS. Opioid-related complications and total opioid consumption were reduced as well. OSA appears to be an attractive alternative to opioid-dependent anesthesia protocols in ASD surgery.