

**Regional Anesthesia Only for Clavicle Fracture ORIF Is Safe and Effective***Devon Ryan, BA; Natalia Iofin, MD; Kenneth Egol, MD;**New York University Hospital for Joint Diseases, New York, New York, USA*

**Purpose:** The purposes of the present study were (1) to report on the efficacy of a combined brachial plexus and superficial cervical plexus block in providing anesthesia for clavicle fracture open reduction and internal fixation (ORIF), and (2) to compare important quality measures such as recovery time, admission rate, and pain medication consumption between patients receiving regional versus general anesthesia.

**Methods:** This study is a retrospective review of patients undergoing ORIF of the clavicle at a single institution over a 20-month period between 2013 and 2014. All patients undergoing clavicle fracture ORIF received either general anesthesia, regional anesthesia (combined block), or general with interscalene block in a nonrandomized manner. The decision for type of anesthesia was made by the patient and attending anesthesiologist. Any complications related to anesthesia were noted, as were the postanesthesia care unit (PACU) phase I recovery time and the time from PACU transfer to discharge. Medications ordered for pain and nausea/vomiting intra- and postoperatively were documented. Analysis of variance (ANOVA) and chi-squared tests were planned to assess differences between groups, with  $P < 0.05$  considered statistically significant.

**Results:** Subjects were divided into 3 groups based on anesthetic technique: regional anesthesia with combined block ("regional,"  $n = 15$ ), general anesthesia with brachial plexus block ("general block,"  $n = 21$ ), and general anesthesia without block ("general only,"  $n = 7$ ). There were no differences between the groups in age, gender distribution, or American Society of Anesthesiologists (ASA) status. All surgical procedures were completed under the planned anesthesia type. Intraoperatively, general only patients received the highest levels of adjunctive medications and regional patients the lowest levels. This was true for fentanyl (ANOVA  $P < 0.001$ ), hydromorphone ( $P = 0.02$ ), morphine ( $P = 0.004$ ), ondansetron ( $P = 0.001$ ), and metoclopramide ( $P < 0.001$ ), but not for acetaminophen ( $P = 0.16$ ). Postoperatively, the amount of pain medication required was lowest for the regional group (2.2 orders regional vs 3.0 general block vs 7.4 general only, ANOVA  $P < 0.001$ ), but the number of nausea and vomiting medications ordered did not differ significantly between the groups. PACU phase I recovery time was longer in patients who received any general anesthesia (125 minutes general only vs 106 general block vs 63 regional, ANOVA  $P = 0.04$ ), as was time from PACU admission to discharge. None of the regional patients were admitted overnight (0%), while 1 general block patient was admitted (4.8%) and 3 general only patients were admitted (42.9%). These rates were significantly different ( $P = 0.003$ ).

**Conclusion:** Regional only anesthesia for clavicle fracture ORIF was demonstrated to be safe and effective and no cases required conversion to general anesthesia. The combined block also performed better than general anesthesia with or without brachial plexus block in terms of postoperative recovery time, overnight admission rate, and postoperative pain control.