Monitored Anesthesia Care and Soft-Tissue Infiltration with Local Anesthesia: An Anesthetic Option for High Risk Patients with Hip Fractures
Sanjit R Konda1, Rachel Ranson, Nicket Dedhia, Yixuan Tong, Sara Jo Solasz, Abhishek Ganta2, Kenneth A Egol1
1NYU Langone Medical Center, 2NYU Hospital For Joint Diseases

INTRODUCTION: A trial of monitored anesthesia care (MAC) with soft tissue infiltration with local anesthesia was developed for hip fracture patients deemed too ill to receive anesthesia. Following success in three patients with no untoward complications, a new anesthesia protocol for intertrochanteric (IT) hip fracture fixation with a short cephalomedullary nail (CMN) using MAC and soft-tissue infiltration with local anesthesia (MAC-STILA) was instituted. This study evaluates the efficacy of the protocol.

METHODS: All patients with an OTA 31.A1-3 IT hip fracture presenting to an urban academic healthcare system from July 2019 to February 2020 treated with a short CMN underwent a new intraoperative anesthesia protocol using MAC-STILA. Medications used for MAC varied per case and were recorded. STILA was standardized with 2.5mg/kg of 0.25% bupivacaine mixed with 100cc of saline injected into 3 standard incision sites with sterile technique. A 1:1:1 risk matched cohort of patients who underwent spinal or general anesthesia for fixation of OTA 31.A1-3 IT fractures with a short CMN were used for comparison. Patient demographics, injury characteristics, intraoperative measures, postoperative pain scores, narcotic and acetaminophen use, hospital quality measures, and inpatient cost were recorded. Standard statistical tests were used to compare all aforementioned data points.

RESULTS:
A total of 60 patients (20 each: MAC, general, spinal) were identified. The most common MAC agents used were Ketamine (100 units) and Propofol (205 units). There were significant differences among the groups regarding mean minimum and maximum intraoperative heart rate with MAC-STILA protocol, demonstrating the best maintenance of normal heart rate parameters (60-100 bpm) (p=0.023/0.027). There was no difference in procedural time between all cohorts (p=0.526). For the first 3 hours postoperatively, MAC-STILA patients reported consistently lower pain scores (VAS <1) than spinal or general patients (VAS>1), reaching significance at hour 2 (p=0.022). Twelve hours postoperatively, narcotic usage was approximately two-times less than the general cohort and one and half times less than the spinal cohort. Through 48 hours postoperatively, MAC-STILA narcotic usage (22.5 mEq) remained approximately one and a half times less than the spinal cohort (36 mEq) and was five times less than the general cohort (116 mEq). No patients experienced episodes of postoperative delirium in either the MAC-STILA or spinal cohorts, whereas four patients experienced delirium in the general anesthesia cohort (p=0.014). There were no significant differences in length of stay, minor or major complications, inpatient and 30-day mortality, or 30-day readmissions, or postoperative ambulatory distance. There was no difference in inpatient cost among cohorts.

DISCUSSION AND CONCLUSION: This feasibility study demonstrates safety for the MAC-STILA protocol with comparison to spinal and general anesthesia. The MAC-STILA protocol is a viable option for treatment of OTA 13.A1-3 IT fractures with a short CMN, and may be the preferred method for patients with severe medical comorbidities.