



52283-Lu

### **52283: Postoperative Magnesium Sulfate Repletion Decreases Narcotic Use in Abdominally-Based Free Flap Breast Reconstruction**

Presenter: Yi-Hsueh Lu, MD, PhD

Co-Authors: Katie E Weichman, MD;

Affiliation: Montefiore Medical Center

**Introduction:** Hypomagnesemia is common in patients who undergo free flap reconstruction. While electrolyte repletion is part of routine patient management, the benefit of magnesium repletion in surgical patients who are asymptomatic is unknown. However, magnesium has been shown to improve perioperative pain control by acting as a muscle relaxant and by potentiation of analgesics. We hypothesized that postoperative magnesium repletion reduces narcotic usage in microsurgical breast reconstruction patients.

**Methods:** A retrospective review of all patients who underwent abdominally-based free flap breast reconstruction in a single institute between December 2019 and March 2022 was conducted. Patients were excluded if they had postoperative takeback or given varied doses of magnesium sulfate. Serum magnesium levels immediately postoperative (POD0) and on postoperative day one (POD1), the amount of magnesium repletion received, and total narcotic requirements in units of oral morphine milligram equivalents (MMEs) for POD0, POD1, POD2, and POD3 were recorded. Patients who received no magnesium sulfate and those who received 2 grams of magnesium sulfate intravenously on POD0 (the most common dosage ordered) were compared. Patient demographics and surgical characteristics were also compared.

**Results:** A total 82 patients were identified but 64 patients met inclusion criteria. During the study period, an ERAS protocol with a narcotic minimizing strategy was in place. When compared with the patients who received no magnesium repletion (n=14), the patients who received 2 grams of magnesium sulfate on POD0 (n=49) showed a significantly lower postoperative serum magnesium level before repletion (1.5 mg/dL vs 1.7 mg/dL, p=0.007) but a significantly higher level on POD1 after receiving repletion (2.1 mg/dL vs 1.7 mg/dL, p=0.0001). While the two groups of patients required similar amount of narcotics on POD0 (17.4 MMEs vs 15.1 MMEs, p=0.6), the patients who received magnesium sulfate required a

significantly less amount of narcotics for pain control on POD1 (10.6 MMEs for 2g magnesium vs 18.9 MMEs for no magnesium,  $p=0.02$ ). There is no significant difference in length of stay (3.2 days for 2g magnesium vs 3.5 days for no magnesium,  $p=0.2$ ) or narcotic usage on POD2 (10.8 MMEs vs 15.9 MMEs) or POD3 (7.0 MMEs vs 10.0 MMEs) between the groups. Of note, the patients who received 2g magnesium have lower BMI compared with the other group (29 kg/m<sup>2</sup> vs 33 kg/m<sup>2</sup>,  $p=0.01$ ). There is no significant difference in age, patient preferred language, smoking history, laterality, or immediate versus delayed reconstruction between the two groups.

**Conclusion:** This is the first study to describe the potential analgesic benefit of routine postoperative magnesium repletion in patients who had abdominal-based free flap reconstruction. Further study is required to understand perioperative magnesium supplementation as part of the ERAS protocol.