

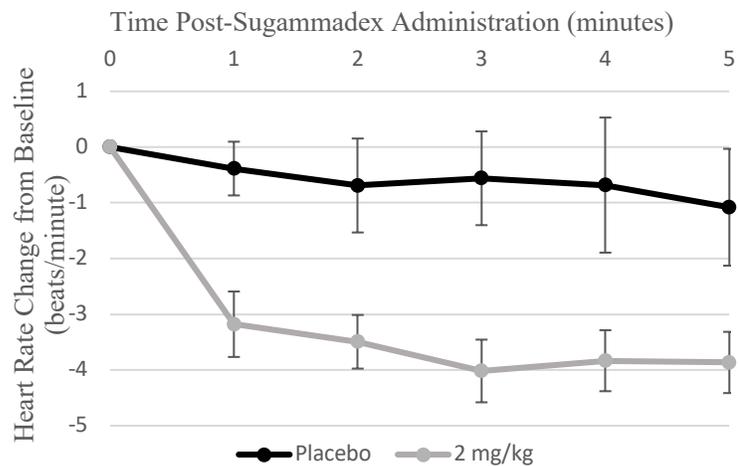
**Abstract Title:** Heart Rate Effects of Sugammadex to Reverse Moderate Neuromuscular Blockade in Patients

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**Background/Introduction:** Sugammadex is a novel cyclodextrin with a selective binding property to reverse aminosteroid non-depolarizing muscle relaxants such as rocuronium. Its mechanism of action is unlike acetylcholinesterase inhibitors used with an anticholinergic drug to avoid heart rate slowing. The FDA approved labeling of sugammadex has a warning for Bradycardia: *Cases of marked bradycardia, some of which have resulted in cardiac arrest, have been observed within minutes after administration.* Reports indicate significant bradycardia in 1 to 7% of cases and case reports describe asystole following sugammadex. This research explored in an intraoperative setting, the frequency and time course of HR changes from administering sugammadex to patients.

**Methods:** Patients with a baseline ECG determined as normal sinus rhythm and scheduled to receive rocuronium were maintained at moderate NMB as determined from TOF monitoring. At surgical anesthesia levels of sevoflurane/air/O<sub>2</sub> on mechanical ventilation to maintain normocarbia and near surgery end either placebo or sugammadex 2 mg/kg was given. Study personnel were blinded to selection. Continuous ECG was recorded from the 5 min prior to and 5 min after study drug administration in a high flow IV.



**Figure 1.** Average change in heart rate after sugammadex administration in 2mg/kg and placebo groups. Error bars represent standard error.

**Results:** The study cohort included 37 primarily male patients with a median age of 63 years. Of the 37 patients, 29 received 2 mg/kg of sugammadex and 8 received placebo. Significant ( $P < 0.01$ ) HR slowing was noted in the sugammadex group but not the placebo group. In 3 patients (10% of cohort), HR slowing was  $> 10$  bpm with a maximum reduction of 15 bpm. Current sample size precludes determining if patient demographics, co-morbidities and medications differed between treatment groups. Additional data collection is ongoing.

**Conclusion:** Reversal of rocuronium NMB with 2 mg/kg of sugammadex lowered HR within a minute of administration and had a sustained effect over the 5 min sampling period. The mechanism underlying this effect is not known.