**Comparison of Sugammadex and Neostigmine on Postoperative Nausea And Vomiting:**

**A Randomized, Blinded Trial**

**Short Title:** Sugammadex and neostigmine outcomes

**Onur Koyuncu, MD,1 Selim Turhanoglu, MD,1 Cagla Ozbakis Akkurt, MD,1 Murat Karcıoglu, MD,1 Mustafa Ozkan, MD,2 Cahit Ozer, MD,3 Daniel I. Sessler, MD,4 Alparslan Turan, MD,4**

1 Department of Anesthesiology and Department of **O**utcomes **R**esearch, Mustafa Kemal University Tayfur Ata Sokmen Medicine Faculty, Hatay.

2 Department of Plastic Surgery, Mustafa Kemal University Tayfur Ata Sokmen Medicine Faculty, Hatay.

3 Department of Family Medicine, Mustafa Kemal University Tayfur Ata Sokmen Medicine Faculty, Hatay.

4 Department of **O**utcomes **R**esearch, Cleveland Clinic, 9500 Euclid Avenue — P77, Cleveland, OH 44195.

Address correspondence to: Onur Koyuncu, MD, Department of ANESTHESIOLOGY, Mustafa Kemal University Tayfur Ata Sokmen Medicine Faculty, Serinyol, Hatay. Telephone: (90)-326-2291000. E-mail: [onurko@yahoo.com](mailto:onurko@yahoo.com).

Received from Mustafa Kemal University Department of Anesthesiology.

Supported by internal funds only. None of the authors has a personal financial interest in this work.

**Abstract**

**Introduction:** The cholinesterase inhibitor neostigmine causes side effects including bradycardia, increased gastric secretion and gastrointestinal motility, and has been associated with increased risk for postoperative nausea and vomiting. Sugammadex is a new neuromuscular antagonist which has different mechanism of action. We therefore tested the hypothesis that sugammadex causes less postoperative nausea and vomiting than neostigmine.

**Methods:** One hundredpatientshaving extremity surgery with a standardized general anesthetic were randomly assigned to neostigmine (70 μg/kg) and atropine (0.4 mg per mg neostigmine) or sugammadex 2 mg/kg for neuromuscular antagonism at the end of anesthesia, when four twitches of train-of-four (TOF) were visible with fade. We recorded postoperative nausea and vomiting, recovery parameters, antiemetic consumption and side effects were recorded.

**Results:** There was no difference in nausea-vomiting scores in all measured times other then the arrival post-anesthesia care unit (PACU) score, which was significantly lower in sugammadex group (p=0.037). Postoperative antiemetic and analgesic consumption were similar between groups. Extubation, first eye opening, and head lift times were shorter in patients given sugammadex (p<0.001 for each). Postoperative heart rates were significantly lower in all measured times patients given neostigmine.

**Conclusion:** Sugammadex maybe preferred in patients with high risk for postoperative nausea and vomiting (PONV) and where low heart rates are not warranted in postoperative period.