



RETHINKING REVERSAL

SUGAMMADEX USE DURING PREGNANCY IN NON-OBSTETRIC SURGERY

SOAP 2026
Montreal, Quebec, Canada
Abstract No. 2329346



Kalli
Fautsch, MD



Carmelina
Gurrieri, MD



Corrine
Nelson, DO



Emily
Sharpe, MD



Andrew
Hanson, MS



Hans
Sviggum, MD

BACKGROUND

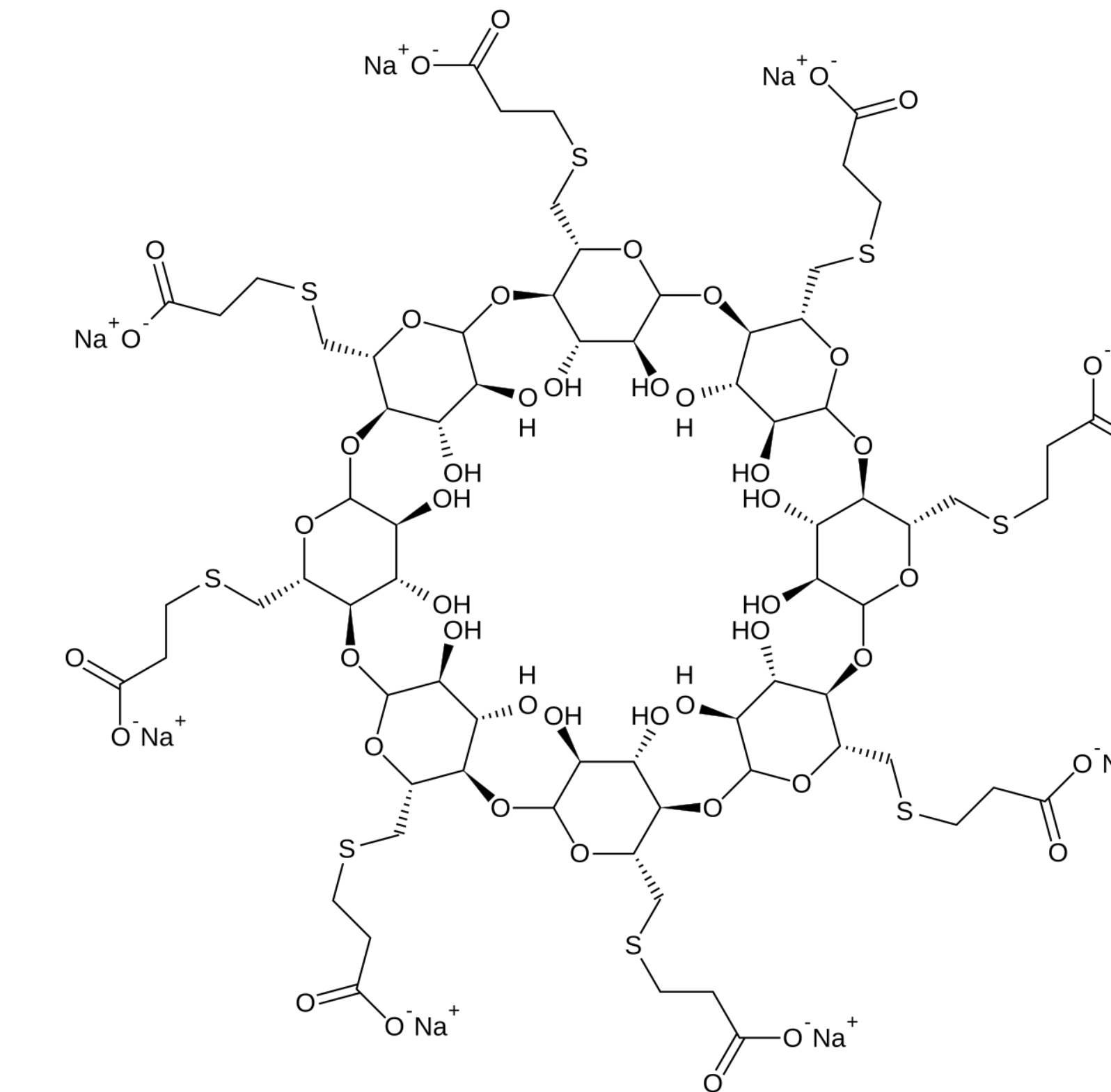
Sugammadex is widely used to effectively and rapidly reverse neuromuscular blockade, regardless of the depth of the block.

However, **its use in OB is limited** due to concerns of potential binding to progesterone and theoretical risk of preterm labor in pregnancy.



April 22, 2019 Statement
Avoid in Patients Undergoing
Surgery During Pregnancy

Available data on the safety of sugammadex in pregnancy is conflicting and inadequate.



HYPOTHESIS

We hypothesize **no differences in obstetric, maternal, or fetal outcomes** in pregnant patients undergoing non-obstetric surgery who **received sugammadex versus neostigmine** for neuromuscular blockade reversal.

STUDY DESIGN & METHODS

- Retrospective cohort study of **pregnant patients** who underwent non-obstetric surgeries in the Mayo Clinic enterprise
 - Received sugammadex or neostigmine for neuromuscular blockade reversal.
 - From October 1, 2016 to December 31, 2023

Primary Aim

Compare the incidence of preterm labor, premature rupture of membranes (PPROM), and pregnancy loss between groups.

Secondary Aim

Assess the overall prevalence of sugammadex use, residual neuromuscular blockade, and postoperative nausea and vomiting (PONV).

RESULTS

- N =101 non-obstetric surgeries involving 100 pregnant women
- No difference demographic or obstetric characteristics
- Preterm Labor = 10% (11% vs 4%)
- PPROM = 5% (5% vs 5%)
- PONV = 19% (21% vs 10%)
- Two unplanned maternal ICU admissions occurred in the neostigmine group

G1P0 @ 32+4 weeks

Post-extubation hypoxic respiratory failure requiring reintubation and ICU admission

G1P0 @ 31+5 weeks

Postoperative tachypnea and tachycardia in PACU requiring ICU admission.

Table 1. Nonobstetric Surgery, Obstetric, and Fetal Outcomes by Neuromuscular Blockade Reversal Strategy.

Nonobstetric surgery outcomes (N=101 procedures)	Neostigmine (N=81)	Sugammadex (N=20)
Maternal age, years, median (Q1, Q3)	29 (26, 32)	28 (25, 32)
Gestational age at surgery, weeks, median (Q1, Q3)	20 (14, 29)	23 (16, 26)
Fetal HR changes (bradycardia) in PACU	1 (1.2%)	0 (0.0%)
Maternal PONV in PACU	17 (21.0%)	2 (10.0%)
Maternal pulmonary complications in PACU	2 (2.5%)	0 (0.0%)
Unplanned maternal ICU admission	2 (2.5%)	0 (0.0%)
Obstetric outcomes (N=100 pregnancies)	Neostigmine (N=80)	Sugammadex (N=20)
Post-surgery admission for pre-term contractions	3 (3.7%)	0 (0.0%)
Preterm labor	9 (11.2%)	1 (5.0%)
PPROM	4 (5.0%)	1 (5.0%)
Gestational age at delivery, weeks		
Range	29 - 41	36 - 41
Median (Q1, Q3)	39 (38, 40)	39 (39, 39)
Cesarean delivery	24 (30.0%)	6 (30.0%)
Delivery complications	5 (6.2%)	0 (0.0%)
Fetal outcomes (N=100 births)	Neostigmine (N=80)	Sugammadex (N=20)
IUGR after surgery	3 (3.8%)	0 (0.0%)
Apgar at 1 minute (n=97), median (Q1, Q3)	8 (7, 9)	8 (8, 9)
Apgar at 5 minutes (n=97), median (Q1, Q3)	9 (9, 9)	9 (9, 9)
Birth weight, grams (n=93), median (Q1, Q3)	3370 (2925, 3814)	3415 (3062, 3791)
Unplanned Neonatal ICU admission (n=99)	6 (7.5%)	0 (0.0%)

HR = Heart rate; PACU = Postanesthesia care unit; PONV = Postoperative nausea and vomiting, ICU = Intensive care unit; PPROM = Preterm premature rupture of membranes; IUGR = Intrauterine growth restriction

No maternal or fetal deaths, new fetal anomalies, or residual neuromuscular blockade were observed in either group



DISCUSSION & CONCLUSION

We describe the successful use of sugammadex in 20 cases of pregnant patients who underwent non-obstetric surgery.

No adverse maternal or fetal events were observed related to sugammadex administration.

However, conclusions regarding safety cannot be drawn from our small retrospective analysis.

Our findings add to the limited but growing evidence supporting the reevaluation of sugammadex use in pregnancy.