

Appendix 1. Patients Requiring Mechanical Ventilation in the Post-anesthesia Care Unit because of Residual Neuromuscular Blockade before and after Sugammadex Availability

Patient (#)	Age (yr)	Sex	ASA-PS	Sux dose (mg)	ND NMBD	Total NMBD (mg)	Procedure	Case length (min)	Case summary	rNMB cause*		
										D	I	S
Before sugammadex introduction (October 1, 2015 to April 12, 2016)												
1	70	F	4	120	Cis	10	Exploratory laparotomy	30	TOF 0/4 at case end, reversal not attempted	X		
2	70	M	2	0	Roc	40	Ileostomy closure	79	TOF 0/4 at case end, reversal not attempted	X		
3	49	M	3	0	Roc	90	Thoracotomy	109	Reversal from TOF 1/4 with incomplete recovery: TOFR = 83%.		X	
4	76	F	3	0	Roc	50	Rigid bronchoscopy	73	TOF 0/4 at case end, reversal not attempted	X		
5	62	F	3E	120	Cis	6	Exploratory laparotomy	90	Reversal from TOF 1/4 with incomplete recovery: visible fade		X	
6	56	M	3	0	Roc	100	Kidney transplant	163	Reversal from TOF 1/4 with incomplete recovery: clinical weakness		X	
7	26	M	4	0	Cis	40	Kidney transplant	206	Reversal from TOF 4/4 with incomplete recovery: clinical weakness		X	
8	69	M	3	0	Roc	50	Laparoscopic nephrectomy	136	TOF 0/4 at case end, reversal not attempted	X		
9	65	F	3	0	Roc	60	Low anterior resection	270	Reversal from TOF 2/4 with incomplete recovery: 56% TOFR		X	
10	44	M	4	160	Cis	24	Kidney transplant	178	Reversal from TOF 1/4 with incomplete recovery: visible fade and TOFR < 90%		X	
11	75	M	3	120	Roc	30	Per oral myotomy	38	TOF 1/4 at case end, reversal not attempted.	X		
12	76	F	3	0	Roc, Vec	50, 2	Salpingo-oophorectomy	113	TOF 0/4 at case end, reversal not attempted	X		
13	59	M	3	0	Roc	60	Retropertitoneal mass	91	Reversal from TOF 1/4 with incomplete recovery: TOFR = 34% and low tidal volumes		X	
14	43	M	3	0	Cis	27	Kidney/pancreas transplant	306	TOF not charted, reversal in OR with incomplete recovery: clinical weakness		X	
15	61	F	2	0	Roc, Vec	50	Laparoscopic colostomy	67	TOF 0/4 at case end, reversal not attempted	X		
16	70	M	3	120	Roc	30	Cystoscopy, stent	30	Reversal from TOF 2/4 with incomplete recovery: fade and low tidal volumes		X	
17	49	F	3E	0	Roc	70	Paraesophageal hernia	99	TOF 0/4 at case end, reversal not attempted	X		
18	70	F	3	0	Roc	50	Thoracoscopy	33	Reversal from TOF 1/4 with incomplete recovery: clinical weakness		X	
19	75	F	3	120	None	N/A	Endoscopic Retrograd Cholangiopancreatography	11	TOF 0/4 at case end: prolonged duration of succinylcholine			X
20	39	F	3	0	Roc	70	Laparoscopic colectomy	333	Reversal from TOF 4/4 with incomplete recovery: fade		X	
21	69	F	3	180	Roc	40	Laparoscopic ventral hernia	147	Reversal from TOF 1/4 with incomplete recovery: clinical weakness		X	
22	78	M	3	80	Roc	70	Thoracoscopy	71	Reversal and extubation in OR without TOF assessment, reintubation with severe weakness (TOF 3/4).			X

Appendix 1. Continued

After sugammadex introduction (April 13 2016 to October 1, 2016)

Patient (#)	Age (yr)	Sex	ASA-PS	Sux dose (mg)	ND NMIBD	Total NMIBD (mg)	Procedure	Case length (min)	Case summary	rNMB cause*		
										D	I	S
1	56	F	2	0	Roc	70	Craniotomy	150	TOF not recorded in OR, reversal not attempted: clinical weakness	X		
2	52	F	2	0	Roc, Cis	130, 6	Donor nephrectomy	120	TOF 0/4 at case end, reversal not attempted	X		
3	37	F	3	100	None	N/A	Esophagogastroduodenoscopy, complex	10	TOF 4/4 at case end with weakness, fade and TOFR = 75%: phase two block after succinylcholine			X
4	67	F	4E	0	Roc	80	Craniotomy	135	TOF 4/4 with fade at case end			X
5	42	M	3	0	Roc	140	Kidney transplant	182	Reversal from 0/4 TOF using neostigmine with incomplete recovery: fade			X
6	50	F	4	0	Roc	80	Esophagogastroduodenoscopy, complex	78	TOF 0/4 at case end, reversal not attempted	X		
7	66	M	4	140	None	N/A	Esophagogastroduodenoscopy, complex	44	TOF 0/4 at case end: prolonged duration of succinylcholine			X

ASA-PS: American Society of Anesthesiologists Physical Status Classification, Sux: succinylcholine, ND NMIBD: nondescribing neuromuscular blocking drug, Cis: cisatracurium, Roc: rocuronium, Vec: vecuronium, OR: operating room, TOF: train-of-four, TOFR: train-of-four ratio, N/A: not applicable, rNMB: residual neuromuscular blockade, D: depth too deep for reversal, I: incomplete reversal (failed reversal), S: succinylcholine effect (prolonged duration).

Appendix 2. Characteristics of Control Variables in the Propensity-matched Population to Compare the Emergence Time and Post-anesthesia Care Unit Length of Stay Between Patients Who Were Reversed Using Sugammadex versus Patients Who Were Reversed Using Neostigmine

	Neostigmine Sugammadex	
	All	
N	876	1,773
distance	0.42	0.29
AGE_AT_VISIT	52.92	55.14
GENDER_DESCFemale	58.7%	55.8%
GENDER_DESCMale	41.3%	44.2%
WEIGHT_KG_Log	4.37	4.39
ASA_Class3	55.6%	55.2%
ASA_Class4/5	10.5%	6.5%
ASA_ClassAny E	4.8%	3.3%
GlomFiltRate_CatGFR > 60	65.9%	86.4%
GlomFiltRate_CatGFR 30-60	13.0%	12.1%
SurgicalSpecialtyGeneral/Onc	36.9%	34.2%
SurgicalSpecialtyNeurosurgery	15.0%	16.9%
SurgicalSpecialtyUrology	13.2%	16.2%
SurgicalSpecialtyOb/Gyn	6.8%	7.2%
SurgicalSpecialtyGastroenterology	3.8%	6.7%
SurgicalSpecialtyOther	7.8%	6.9%
Log_SurgicalCaseLength	4.71	4.63
Propensity Matched Cohort		
N	876	568
distance	0.42	0.42
AGE_AT_VISIT	52.92	53.30
GENDER_DESCFemale	58.7%	57.3%
GENDER_DESCMale	41.3%	42.7%
WEIGHT_KG_Log	4.37	4.38
ASA_Class3	55.6%	57.1%
ASA_Class4/5	10.5%	10.4%
ASA_ClassAny E	4.8%	3.9%
GlomFiltRate_CatGFR > 60	65.9%	66.2%
GlomFiltRate_CatGFR 30-60	13.0%	13.0%
SurgicalSpecialtyGeneral/Onc	36.9%	37.6%
SurgicalSpecialtyNeurosurgery	15.0%	14.6%
SurgicalSpecialtyUrology	13.2%	13.2%
SurgicalSpecialtyOb/Gyn	6.8%	7.1%
SurgicalSpecialtyGastroenterology	3.8%	3.5%
SurgicalSpecialtyOther	7.8%	7.8%
Log_SurgicalCaseLength	4.71	4.74

ASA: American Society of Anesthesiologists Physical Status Classification, GFR: glomerular filtration rate, General/onc: general surgery and oncologic surgery, Ob/gyn: obstetric and gynecologic cases.