



SUGAMMADEX AND POSTOPERATIVE URINARY RETENTION AFTER HYSTERECTOMY

A PROPENSITY-MATCHED COHORT ANALYSIS

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DISCLOSURES

- No financial disclosures 😊





BACKGROUND CLINICAL PRACTICE AND STUDIES



CLINICAL PRACTICE

- Clinician perception of reduced rates of postoperative urinary retention (POUR) when using sugammadex for reversal of NMB after general surgery
- Discussions within Multispecialty Anesthesia division revealed similar experience

PREVIOUS RESEARCH

- Reduced time to return of bowel function after intraperitoneal surgeries with sugammadex. *Deljou, Atousa et al. “Effects of Sugammadex on Time of First Postoperative Bowel Movement: A Retrospective Analysis.” Mayo Clinic proceedings. Aug. 2019*
- Lower rates of POUR when Sugammadex was the reversal drug of choice. *Valencia Morales, Diana J et al. “Urinary Retention Following Inguinal Herniorrhaphy: Role of Neuromuscular Blockade Reversal.” Surg Laparosc Endosc Percutan Tech. May. 2021*



METHODS AND MATERIALS

METHODS

PROPENSITY WEIGHTED RETROSPECTIVE COHORT ANALYSIS

- Hysterectomies performed at Mayo Rochester 2013 - 2018 under general anesthesia with NMBD
- Cohort dichotomized on two groups:
 - Sugammadex reversal
 - Neostigmine/glycopyrrolate
- Exclusion: combined obstetrics procedures, extensive resections, emergency procedures, lack of reversal
- Primary outcome: POUR was defined as unplanned bladder re-catheterization after surgery end.

METHODS AND MATERIAL

IPTW

- Reduce potential treatment selection bias or confounding effects in this observational study = inverse probability of treatment weighting (IPTW)
- Sugammadex as the dependent variable; Table 1 as explanatory variables

Variable	Sugammadex	Neostigmine/ Glycopyrrolate	Unadjusted	IPTW
Age, yrs	57.3±13.1	56.2±13.3	0.082	0.041
BMI, kg/m ²	30.1±7.2	32.0±9.5	0.228	0.107
Anemia	249 (64%)	1074 (68%)	0.075	0.038
Diabetes	41 (11%)	187 (12%)	0.039	0.012
Hypertension	161 (41%)	656 (41%)	0.003	0.044
Renal disease	0 (0%)	0 (0%)		
Benzodiazepines	29 (7%)	106 (7%)	0.031	0.025
Home opioid	45 (12%)	238 (15%)	0.100	0.045
Procedure type				
Abdominal	96 (25%)	491 (31%)	0.139	0.141
Robotic assisted	181 (47%)	670 (42%)	0.089	0.076
Vaginal	111 (29%)	425 (27%)	0.040	0.065
Repair	49 (13%)	187 (12%)	0.026	0.002
Scopolamine	65 (17%)	132 (8%)	0.257	0.002
Dexamethasone	351 (90%)	1285 (81%)	0.273	0.043
Crystalloids, ml	2952±1254	2698±1200	0.207	0.012
Intraoperative OME	88.9±35.9	99.5±38.5	0.283	0.157
Surgery length, min	180.2±87.8	172.1±81.8	0.095	0.184



RESULTS

PRIMARY OUTCOME AND POST HOC ANALYSIS

RESULTS

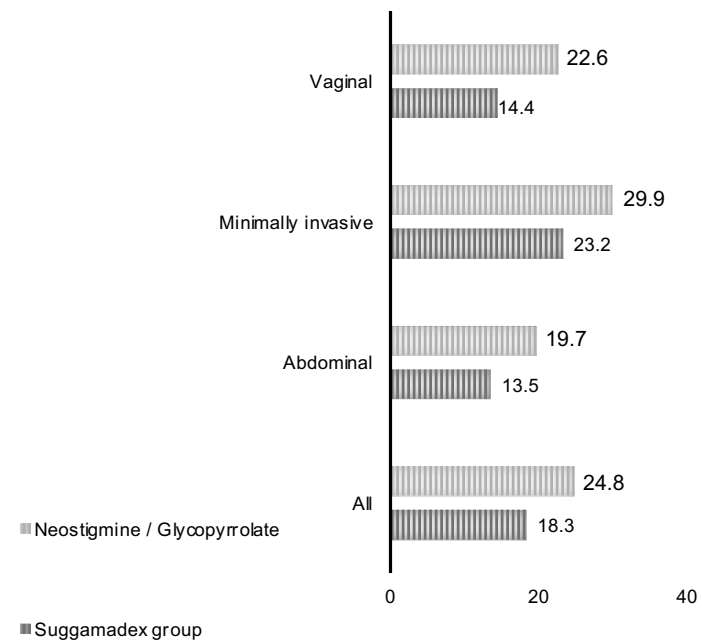
FINAL COHORT AND IPTW

- 1,974 women underwent hysterectomy under general anesthesia over the study timeframe meeting the inclusion criteria
- 1,586 received neostigmine/glycopyrrolate for NMB reversal, and 388 received sugammadex
- 587 (30%) abdominal procedures, 851 (43%) robotic-assisted, and 536 (27%) vaginal procedures
- SD was >0.20 for age, BMI, scopolamine, dexamethasone, crystalloids, and intraoperative opioids without propensity score adjustment
- After IPTW adjustment, the groups were well balanced.

RESULTS

POSTOPERATIVE URINARY RETENTION

- POUR - 393/1193 (24.8%) for neostigmine/glycopyrrolate and 71/388 (18.3%) for sugammadex group
- unadjusted OR=0.68 [95%C.I. 0.51 to 0.90], p=0.007; IPTW adjusted OR=0.53 [95%C.I. 0.37 to 0.76], p<0.001
- median time from surgery end to POUR diagnosis was 10.1 [5.3, 22.9] hours



RESULTS

POSTOPERATIVE URINARY RETENTION

- A post hoc analysis was performed among patients in the sugammadex group,
 - 128 (33%) received glycopyrrolate to treat bradycardia intraoperatively
 - frequency of POUR was higher with glycopyrrolate within the sugammadex group, (25.0% vs 15.0%)
- unadjusted OR=1.89 [95% C.I. 1.12 to 3.19], p=0.018;
- covariate adjusted OR=1.86 [95% C.I. 1.07 to 3.22], p=0.028

RESULTS
OUTCOMES

- Similar postoperative hospital course
- Increased rates of postoperative pain
- Increased frequency of PONV
- Longer hospitalization in the minimally invasive hysterectomy subgroup

Not a causal relationship





DISCUSSION AND FINAL CONCLUSIONS

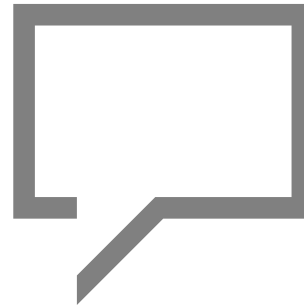


POUR

- Overall incidence was similar to recent studies in the area; around 21%.
- Sugammadex reversal associated with 47% reduction in POUR risk compared to traditional reversal with neostigmine and glycopyrrolate.
- Coadministration of glycopyrrolate for other indications (e.g., bradycardia) with higher rates of POUR
- Findings support the results from recent studies, where NMB with sugammadex was associated with reduced rates of POUR in other surgical areas.



QUESTIONS & ANSWERS



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