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Effect of Deep versus Moderate Neuromuscular Blockade in Reducing Postoperative Pain and Insufflation Pressure during Ambulatory Robotic Prostatectomy: A Randomized Controlled Trial

Marielle P Soeprono, MS CRNA

Kay See Tan PhD, Kara M Barnett MD FASA SAMBA-F, Sheila Carr, Joanna Serafin PhD, Anastasia Bui, Behfar Ehdaie MD, Luis E Tollinche MD FASA, Cindy B Yeoh MD FASA, Elizabeth F Rieth MD FASA

Memorial Sloan Kettering Cancer Center, New York, NY

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Disclosures

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Background

- Neuromuscular blockade (NMB) with rocuronium and sugammadex reversal enables deep NMB[1] → optimize surgical conditions in robotic surgery?
- Limited and conflicting research on NMB depth and perioperative outcomes in robotic prostatectomy[3,4]

Objective:

- Compare deep vs. moderate NMB effects on:
  - IAP
  - Postoperative pain
  - Perioperative outcomes

Hypothesis:

- **deep** NMB will:
  - ↓IAP
  - ↓postoperative pain
  - improve perioperative outcomes

1. Lee et al. Anesthesiology. 2009 May;110(5):1020-5.
2. Thilen et al. Anesthesiology. 2023 Jan 1;138(1):13-41.
3. Koo et al. J Clin Med. 2021 Oct 29;10(21):5090.
4. Williams et al. Br J Anaesth. 2020 Feb;124(2):164-172.

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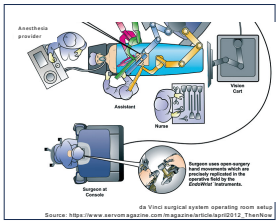
Methods

- Prospective, single-center randomized controlled trial, n=130
- Ambulatory robotic prostatectomy patients, < 80 years, ASA I-III
- Randomized to deep vs moderate NMB
  - Deep NMB: TOF = 0, PTC = 1-2
  - Moderate NMB: TOF = 1-2
- Monitoring: quantitative Neuromuscular Transmission (NMT) device (GE Healthcare)



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Outcomes & Analysis

- **Primary Outcomes**: IAP, Postoperative pain
- **Secondary Outcomes**: Surgical conditions, intraoperative opioids, operating time, EBL, PONV, shoulder pain
- **Linear mixed effects model adjusted for:** BMI, surgeon-level random effects
- **Quantitative NMT monitor challenges**: Secondary exploratory analysis

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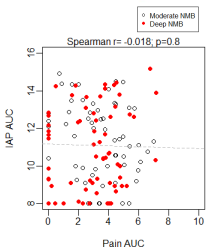
Results

- Deep NMB (n=67), Moderate NMB (n=63)
- Primary outcomes
  - 1% lower IAP in deep group (p=0.5)
  - 25% lower postop pain in deep group (p=0.2)
  - → **neither statistically significant**
- Secondary Outcomes
  - No significant differences except intraoperative IV MME (-0.9 in deep; p=0.048)
- Exploratory Analysis (presented separately)
  - Findings comparable to primary analysis



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Conclusions & Future Directions

- Quantified deep NMB had no effect on IAP, postoperative pain & all but one secondary outcome
- Low overall need for analgesics/antiemetics
- Explore in other surgical populations
- Technical challenges with quantitative NMB monitoring (presented separately)
- Studies using newer-generation monitors warranted

Contact information
Marielle P Soeprono, MS CRNA
Email: PalopM@mskcc.org

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