

# Avoidance of Long-Acting Neuromuscular Blocking Agents Decreases the Risk of Postoperative Pulmonary Complications in Pregnant Patients Undergoing Fetoscopic Myelomeningocele Repair

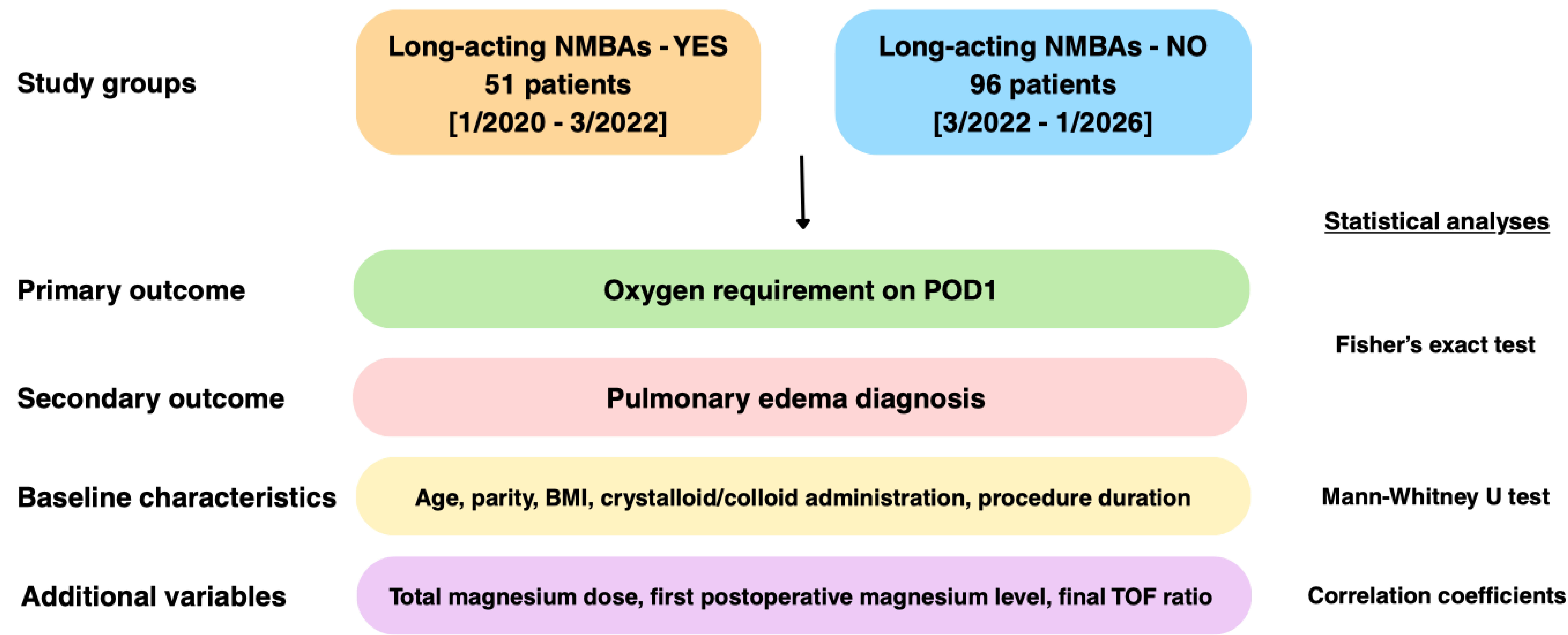
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- Postoperative pulmonary complications = frequent complication of fetal surgery
  - Pulmonary edema: historic culprit
    - Tocolytic agents: magnesium sulfate, calcium channel blockers
    - Irrigation fluid: facilitates open fetal surgery
  - What about other postoperative pulmonary complications (PPCs)?
    - Aspiration?
    - Atelectasis?
- For pregnant patients undergoing MMC repair, are those who receive long-acting neuromuscular blocking agents (NMBAs) at higher risk of PPCs?

# Study Design & Methods

- Retrospective cohort study
- 147 patients who underwent fMMC repair from 2020 to 2026



# Results

|                                                                                                       | Long-acting NMBAs - YES<br>51 patients<br>[1/2020 - 3/2022] | Long-acting NMBAs - NO<br>96 patients<br>[3/2022 - 1/2026] |                                |
|-------------------------------------------------------------------------------------------------------|-------------------------------------------------------------|------------------------------------------------------------|--------------------------------|
| Oxygen requirement on POD1                                                                            | 38.8%                                                       | 18.8%                                                      | OR 2.74 [1.31 - 5.73, p=0.015] |
| Pulmonary edema diagnosis                                                                             | 12.2%                                                       | 1.0%                                                       | OR 13.3 [1.6 - 111.5, p=0.006] |
| IV fluid volume: 400mL [250-700] 800mL [500-1000] p<0.001                                             |                                                             |                                                            |                                |
| No differences - age, parity, BMI, colloid volume, procedure duration                                 |                                                             |                                                            |                                |
| No association with PPCs - total magnesium dose, first postoperative magnesium level, final TOF ratio |                                                             |                                                            |                                |

# Discussion

- Significantly increased risk of postoperative pulmonary complications for fetal MMC patients who receive long-acting NMBA's
  - Long-acting NMBA's + magnesium sulfate → WEAKNESS!
  - No association detected between total magnesium dose, first postoperative magnesium level, or final train-of-four (TOF) ratio with risk of PPCs
- Limitations
- Our approach
  - No longer use long-acting NMBA's following rapid sequence intubation with succinylcholine
    - Remifentanyl infusion
  - Frequent incentive spirometry (establish preop baseline) + early ambulation
- Future directions
  - Which variables are predictive? How can we identify at-risk patients? How can we mitigate risk?