

Maximum Inspiratory Pressure As A Predictor Of Post-operative Breathlessness In Obese Patients Receiving Interscalene Blocks

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INTRODUCTION

•Interscalene brachial plexus block often leads to hemi-diaphragmatic paresis due to phrenic nerve involvement.

•No current tools or devices effectively predict which patients will suffer respiratory complications post-interscalene block.

•This study investigates if low preoperative Maximum Inspiratory Pressure (MIP) correlates with increased risk of postoperative breathlessness in obese patients receiving interscalene blocks.

METHODS

•The study, approved by the institutional ethics board, enrolled 45 patients across 3 groups based on BMI and surgical approach, focusing on the effects of interscalene block and general anesthesia.



Handheld MIP Monitor

•Standard anesthesia protocols were applied, ensuring no deviation from care standards.

•Respiratory metrics, including MIP and spirometry values, were collected pre- and post-operation using standardized equipment and methods. Breathlessness was assessed using modified Borg questionnaire.

RESULTS

•Demographic similarities were observed across groups, with significant differences in weight, BMI, and cardiovascular disease incidence, particularly between groups 1 and 2.

•A significant relationship between low preoperative MIP and postoperative breathlessness was identified in obese patients.

•Obese patients with lower MIP had lower PACU SaO₂ despite extended oxygen support and had longer PACU stays.

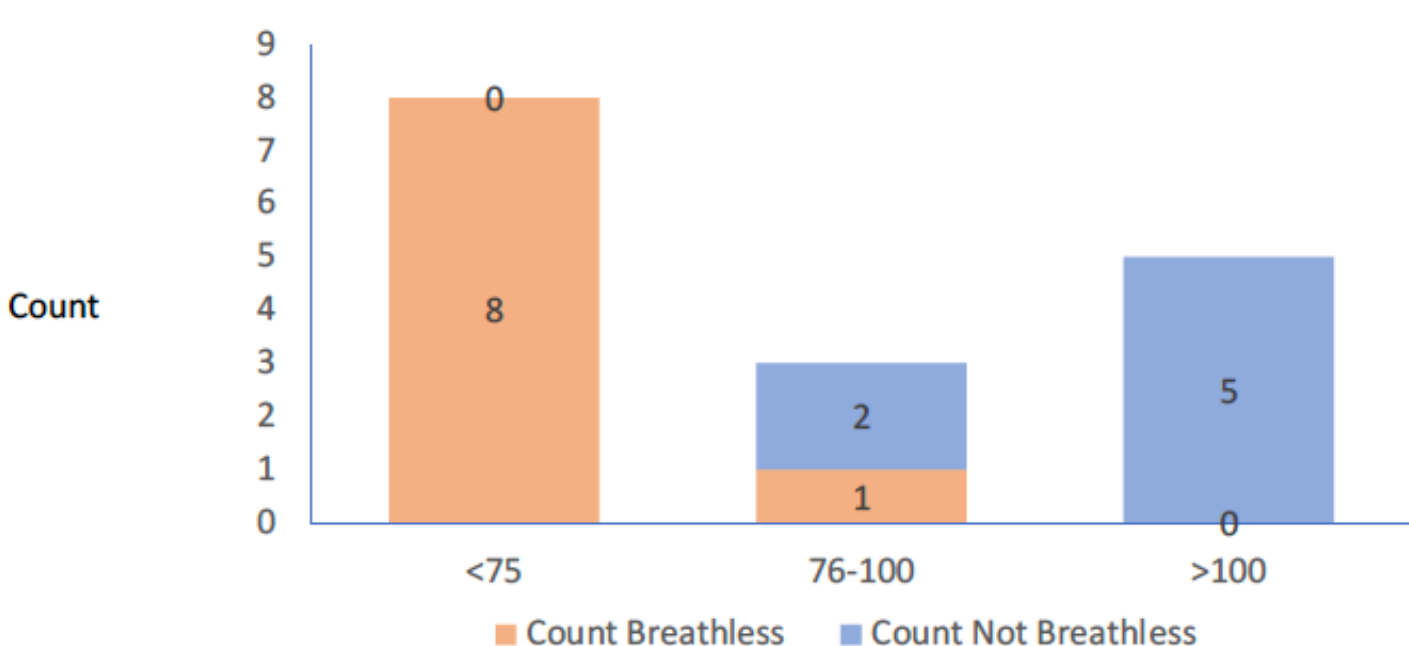
•Spirometry lung volume measurements did not predict breathlessness. Percent predicted FEV1 showed mild correlation.

Table 1: Effect of Preoperative MIP on Breathlessness in PACU in Obese

	<=75 n=7	76-100 n=4	>100 n=4	Total n=15	p-value
PACU Breathlessness, n(%)					
Yes	7 (100%)	1 (25.0%)	0 (0%)	8 (53.3%)	0.0014
No	0 (0%)	3 (75.0%)	4 (100%)	7 (46.7%)	

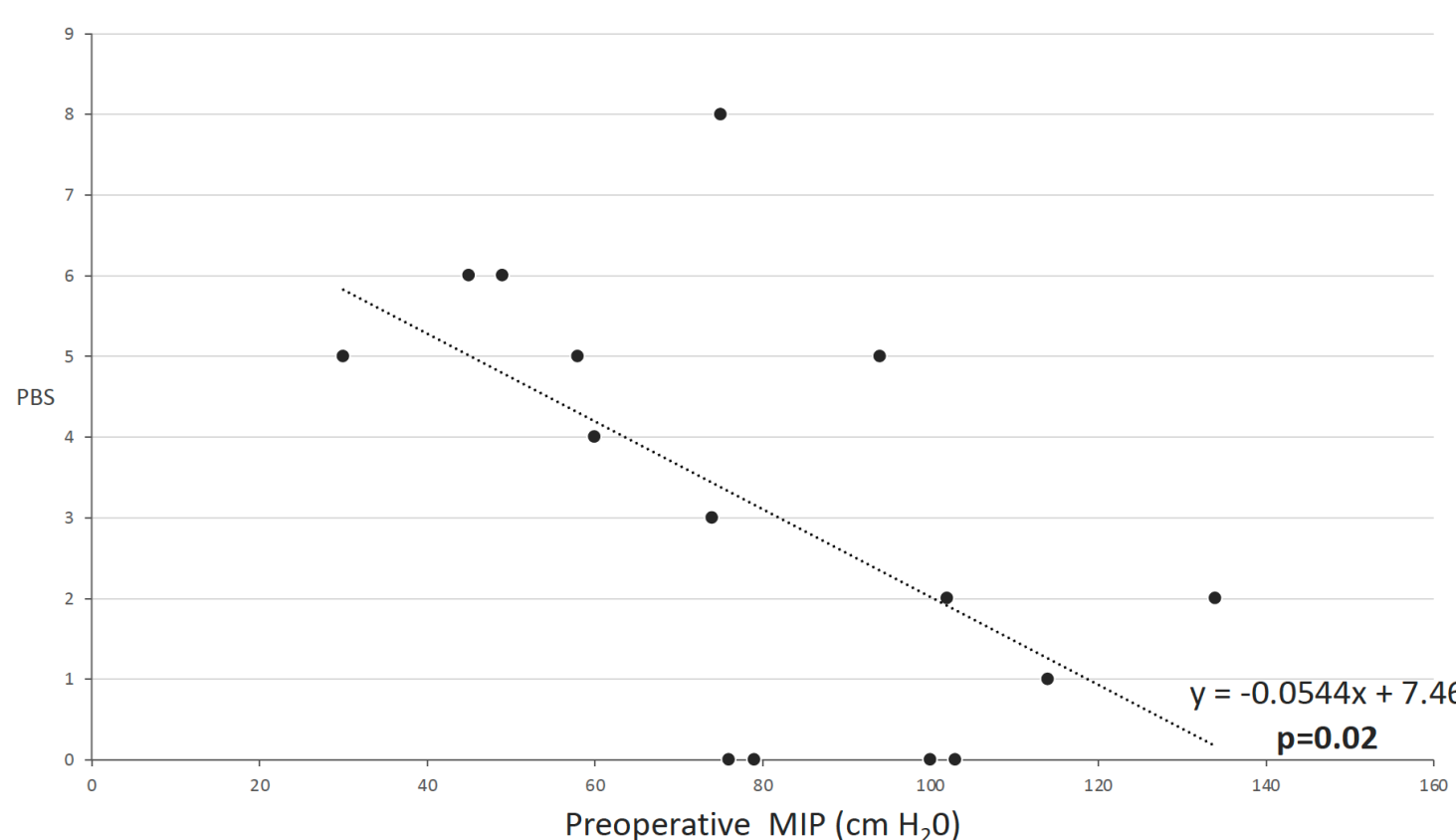
- Breathlessness was defined as a score of 3 or higher on the modified Borg scale indicating moderate to severe breathlessness. Fisher exact test was used for categorical covariates.

Figure 1: Preop MIP and Breathlessness in Obese



X-axis: 3 categories of preoperative MIP (cm H₂O). Y-axis: Count of patients
All obese patients with MIP<75 developed breathlessness and none with MIP>100 did.

Figure 2: Effect of preoperative MIP on Postoperative Breathlessness Score (PBS)



DISCUSSION

•This study identifies low preoperative MIP as a predictive measure for postoperative breathlessness in obese patients undergoing interscalene nerve block.

•This is a groundbreaking novel application of MIP measurement in regional anesthesia, highlighting its potential in improving preoperative assessments and patient outcomes.

•It underscores the unique respiratory challenges in obese patients, suggesting pathophysiological differences that necessitate tailored anesthesia approaches.

•The findings advocate for further research to refine MIP cutoff values for better predicting respiratory complications, aiming to enhance safety and efficacy in anesthetic practice for high-risk patient groups.

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