

Impact of Sleep Study Timing on Post-Operative Respiratory Management in Bariatric Surgery

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Introduction

Obstructive sleep apnea (OSA) is highly prevalent among patients undergoing metabolic bariatric surgery and contributes to increased perioperative risk. Guidelines recommend pre-operative sleep evaluation, but the optimal timing and impact of a sleep study-confirmed OSA diagnosis on perioperative outcomes remain unclear. We investigated whether the temporal proximity of a sleep study (within 365 days before surgery) influences respiratory outcomes and CPAP use postoperatively in bariatric surgical patients.

Table 1. Baseline Demographics

Characteristic	Value
Age, median (years)	45
BMI, median (kg/m²)	42.5
Diagnosed obstructive sleep apnea (OSA), n (%)	206 (66.0)
└ Confirmed by sleep study, n (%)	147 (71.4)
No OSA diagnosis, n (%)	106 (34.0)

Methodology

This was a retrospective cohort analysis of 312 patients who underwent either Roux-en-Y or sleeve gastrectomy robotically. Patients were divided into three groups: patients who had a sleep study within 365 days of their surgery, those who had a sleep study earlier than 365 days before, and those who did not have a sleep study. Outcomes included postoperative CPAP use, desaturation events (a ≥3% drop of SpO₂ for ≥30 seconds), average SpO₂, time spent at SpO₂ <89%, and SpO₂ nadir. Descriptive statistics were done to categorize the cohort and nonparametric tests to compare outcomes.

Table 2. Multivariable Regression Results

Predictor	Odds Ratio (OR)	95% CI	p-value
Preoperative AHI (per unit increase)	1.02	1.01 – 1.04	0.013
BMI (per kg/m² increase)	1.06	1.00 – 1.11	0.037
Sleep study ≤365 days prior	0.88	0.44 – 1.74	0.71

Results

The final cohort included 312 patients (median BMI 42.5 kg/m², age 45); 206 (66%) had OSA, with 147 (71.4%) confirmed by sleep study. Confirmed OSA was linked to higher perioperative CPAP use (χ^2 p<0.001), but not to desaturation events, nadir SpO₂, or oxygenation metrics (all p>0.05). Sleep study temporal proximity within 365 days (n=102) did not affect desaturation events (p=0.118), nadir SpO₂ (p=0.362), or CPAP use (p=0.277); findings were consistent at 180- and 730-day cutoffs. Logistic regression showed preoperative AHI (OR 1.02, 95% CI 1.01–1.04, p=0.013) and BMI (OR 1.06, 95% CI 1.00–1.11, p=0.037) predicted postoperative CPAP need, whereas sleep study temporal proximity within 365 days did not (OR 0.88, 95% CI 0.44–1.74, p=0.71).

Conclusion

In bariatric patients with OSA, confirmation of OSA by preoperative sleep study was associated with increased perioperative CPAP use. This could reflect higher baseline risk among patients who underwent sleep studies. Regardless, the temporal proximity within 365 days of sleep study testing did not influence postoperative outcomes nor predict the need for CPAP. Objective OSA severity (AHI), even from older studies, and BMI better predicted CPAP need. These findings suggest that confirming OSA status and obtaining objective measurements is valuable for guiding perioperative management, but a recent sleep study may not be as important.

Figure 1. Forest Plot of Logistic Regression Results

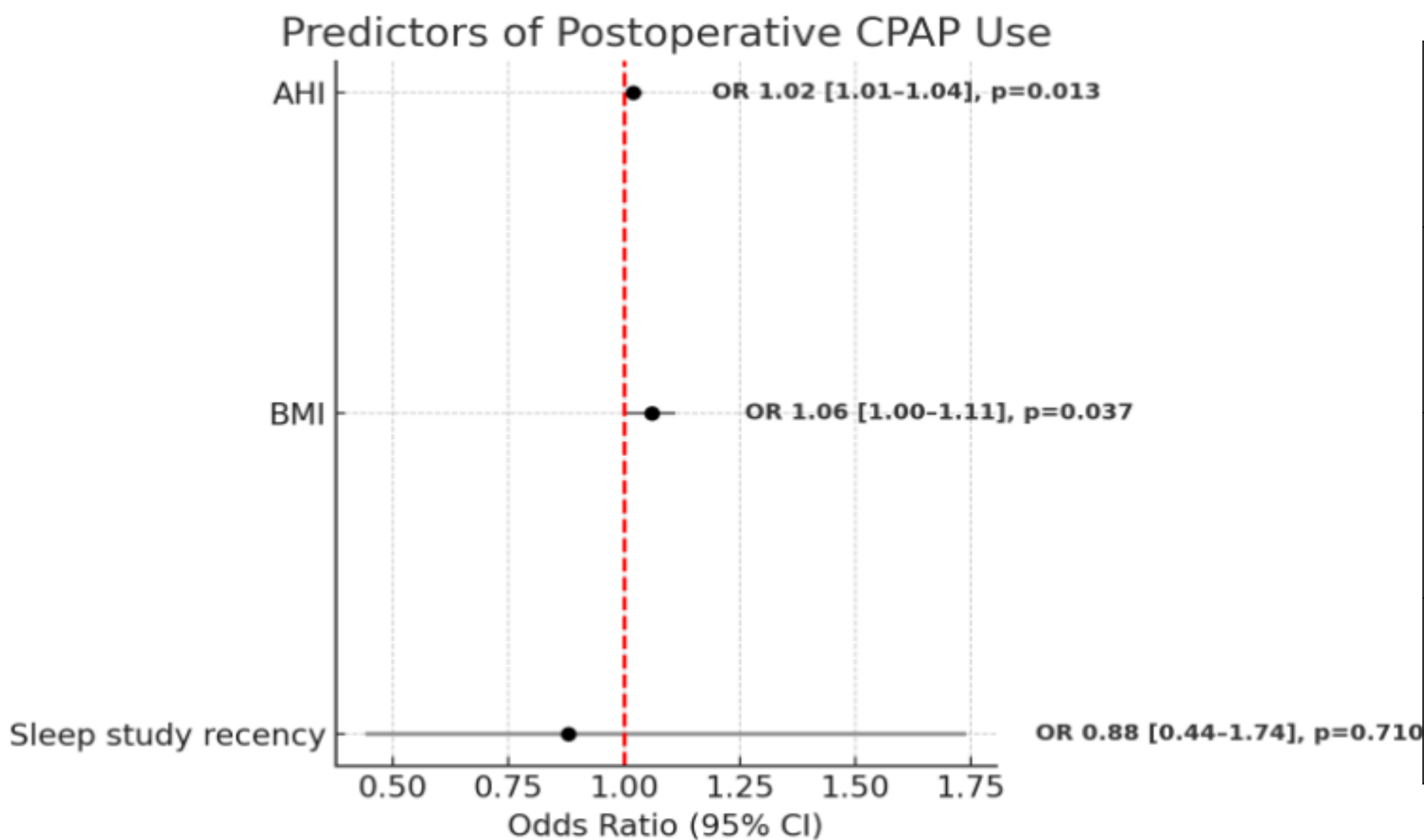


Table 3. Respiratory Outcomes by Sleep Study Recency

Outcome	≤365 Days (n = 102)	>365 Days	p-value
Desaturation events	No difference	—	0.118
Nadir SpO ₂	No difference	—	0.362
Perioperative CPAP use	No difference	—	0.277