

Comparison of Oxygen Saturation in Left Lateral Versus Supine Versus Fowler’s/Semi-Fowler’s Position for Bariatric Patients

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IntroductionResultsDiscussion

- The relationship between patient positioning and optimal oxygenation has been well established.
- Obesity impacts oxygenation by altering pulmonary function and increasing risk for concomitant respiratory diseases like obstructive sleep apnea.^{1,2}
- Current ASMBS recommendations include screening endoscopies before and after bariatric surgery.³ Current standard is the left lateral position.

Methods

- A retrospective chart review of bariatric patients who underwent Esophagogastroduodenoscopy (EGD) with biopsy and had a history of gastric bypass surgery at a single academic institution from October 2020-July 2023 was conducted.
- Patients were excluded from the study if they had a BMI<35, underwent any procedure other than EGD w/ biopsy, or if a patient was positioned prone or Fowler’s low (<30 degrees).
- Differences in desaturation events between positions were analyzed with multivariate logistic regression adjusting for:
 - BMI, ASA classification, Age, Asthma, Sleep Apnea, and dexmedetomidine (Precedex) use.

Variable	Left Lateral (N=239)	Supine (N=144)	Fowler's/ Semi-Fowler's (N=121)	P-value
BMI [Q1,Q3]	44.4 [40.1,47.6]	43 [40.7,49.1]	43.8 [40.7,49.1]	0.987
Age [Q1,Q3]	40 [33,49]	40 [33,51]	40 [33,50]	0.669
ASA Classification [Q1,Q3]	3 [3,3]	3 [3,3]	3 [3,3]	0.17
Current Smoker (%)	13(6)	7(5.9)	5(4.7)	0.447
GERD (%)	142(65.4)	84(71.2)	84(78.5)	0.052
Pulmonary Diseases				
Asthma (%)	40 (18.4)	25 (21.2)	24 (22.4)	0.036
Sleep Apnea (%)	93 (42.9)	63 (53.4)	62 (57.9)	0.087
History of Severe COPD (%)	3 (1.4)	1 (0.8)	6 (5.6)	0.041
History of Pulmonary Embolism (%)	4 (1.8)	1 (0.8)	1 (0.9)	0.876
Cardiovascular Diseases				
HTN (%)	114(52.5)	60(50.8)	57(53.3)	0.93
CHF (%)	4(1.8)	2(1.7)	5(4.7)	0.245
Diabetes Mellitus (%)	55(25.3)	26(22)	22(20.6)	0.588
History of Myocardial Infarction (%)	1(0.5)	3(2.5)	2(1.9)	0.16

Table 1. Baseline Characteristics of Positional Groups

Variable	Odds Ratio	Lower Bound 95% CI:	Upper Bound 95% CI:	P-value
(Fowler’s/Semi-Fowler’s Reference)				
Left Lateral	2.27	0.73	7.13	0.158
Supine	2.83	0.87	9.26	0.085
BMI	0.98	0.93	1.03	0.466
ASA	2.86	0.59	13.76	0.191
Age	0.99	0.97	1.03	0.856
Asthma	0.21	0.05	0.93	0.039
Sleep Apnea	0.48	0.22	1.03	0.060
Dexmedetomidine	0.77	1.65	0.36	0.498

Table 2. Multivariate Logistic Regression for Oxygen Desaturation Events.

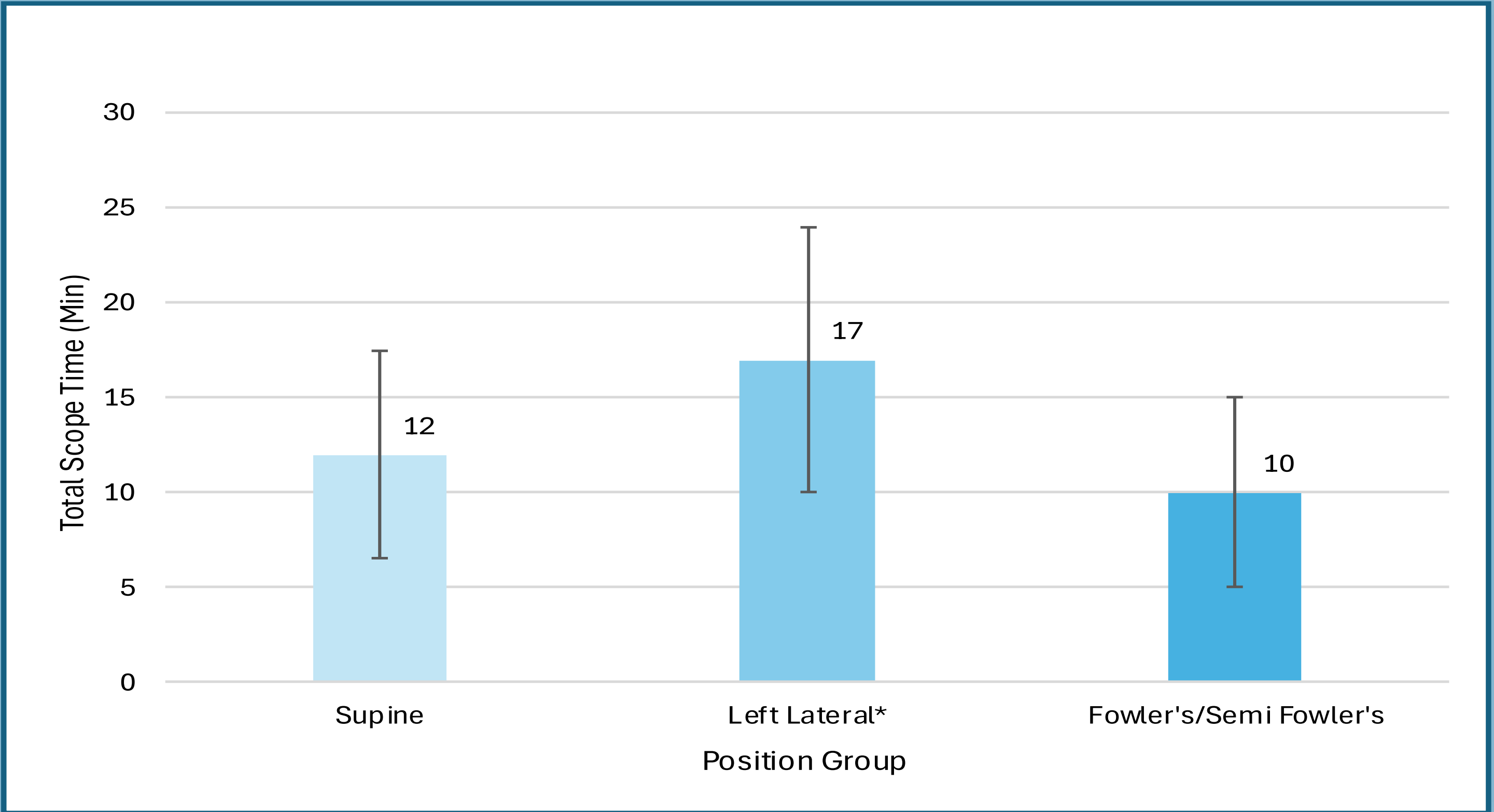


Figure 1. Median Scope Time by Position Group. Error bars represent IQR of Total Scope Time. * represents significant difference in distribution of total scope time between left lateral and supine (adj. p=0.012) and between Left Lateral and Fowler’s/Semi-Fowler’s (adj. p<.001).

- There was no significant increase in oxygen desaturation events or any other related variable measured between positional groups including oxygen saturation (intraop and postop), end tidal CO₂, and respiratory rate.
- Total scope time was significantly longer in the left lateral position while there was no difference in total anesthesia time between position groups. Possibly due to trainees in procedures or difficulty accessing the esophagus.
- Asthma is protective against oxygen desaturation events, possibly due to the use of B₁ agonists, or more aggressive oxygenation therapy.

References

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No significant increase in odds of desaturation events between position groups.
Left lateral position has significantly longer total scope time than other positions.
Patients with asthma have a significantly decreased odds of desaturation events.