Minimally Invasive vs. Open Esophagectomy in Patients with a BMI > 35: A NSQIP Analysis

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Background & Methods

Esophageal Cancer is the 11th most prevalent cancer and 7th leading cause of cancer death worldwide. Squamous Cell Carcinoma (SCC) is more common worldwide, but **Adenocarcinoma (AC) is the leading subtype in Western nations + US**

Risks of AC include smoking, obesity, GERD, and Barrett's Esophagus.

Rates of obesity have doubled since 1990, paralleling the **rise in esophageal AC** prevalence. It is therefore imperative to study esophagectomy in this patient population given these trends. This includes minimally invasive esophagectomy (MIE), which has emerged as a safe and effective option.

This is **a retrospective cohort study of NSQIP Targeted Esophagectomy database from 2016-2023.**

We identified **Patients with BMI >35** undergoing **MIE** and open esophagectomy (**OE**), with malignancy.

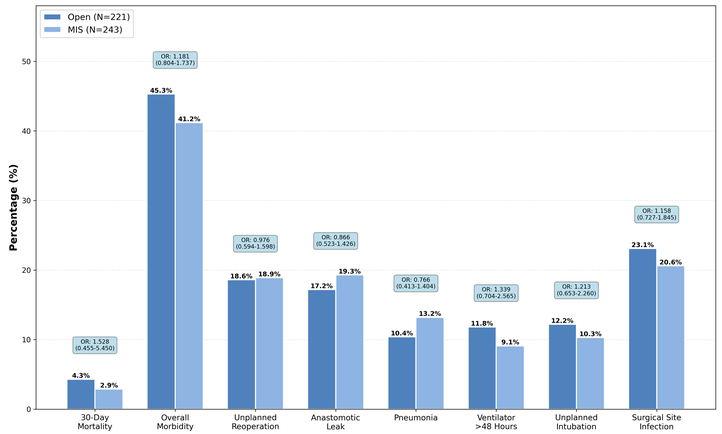
Primary outcomes: morbidity, mortality, LOS, leak rate. Logistic regression modeling performed adjusting for ASA class, DM, Smoking status, functional health status

Patient Demographics

Category	Variable	Full Cohort (N=464)	MIS (N=243)	Open (N=221)
Demographics	Male	354 (76.3%)	185 (76.1%)	169 (76.5%)
	Female	110 (23.7%)	58 (23.9%)	52 (23.5%)
	Age, years - Mean (Median)	61.2 (62.0)	61.8 (63.0)	60.5 (61.0)
	BMI, kg/m^2 - Mean (Median)	39.7 (38.1)	39.6 (38.0)	39.8 (38.2)
Race	White	358 (77.2%)	191 (78.6%)	167 (75.6%)
	Unknown/Not Reported	87 (18.8%)	43 (17.7%)	44 (19.9%)
	Black or African American	11 (2.4%)	5 (2.1%)	6 (2.7%)
	Asian	5 (1.1%)	3 (1.2%)	2 (0.9%)
	American Indian/Alaska Native	2 (0.4%)	0 (0.0%)	2 (0.9%)
	Functional Status - Independent	460 (99.1%)	240 (98.8%)	220 (99.5%)
Health History	Functional Status - Partially Dependent	4 (0.9%)	3 (1.2%)	1 (0.5%)
	Functional Status - Totally Dependent	0 (0.0%)	0 (0.0%)	0 (0.0%)
	ASA Class 1-2	35 (7.6%)	18 (7.4%)	17 (7.7%)
	ASA Class 3+	428 (92.4%)	225 (92.6%)	203 (92.3%)
Pathology	Adenocarcinoma	423 (91.2%)	226 (93.0%)	197 (89.1%)
	Dysplasia	12 (2.6%)	3 (1.2%)	9 (4.1%)
	Squamous Cell Carcinoma	13 (2.8%)	4 (1.6%)	9 (4.1%)
	Other - Malignant	16 (3.4%)	10 (4.1%)	6 (2.7%)

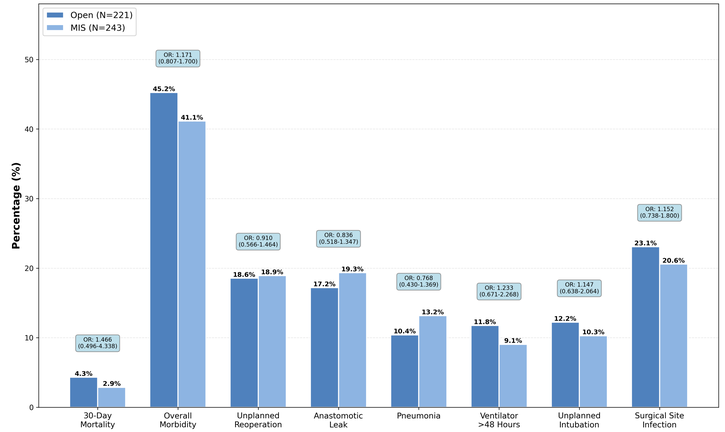
Results

Unadjusted Outcomes: Open vs MIS Esophagectomy

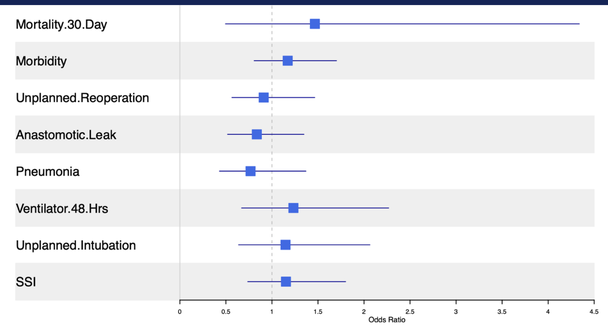


Outcome	Open	MIS	OR (95% CI)
LOS, days (p = 0.046)	11.31	9.96	-1.354 (-2.686 to -0.022)

Adjusted Outcomes: Open vs MIS Esophagectomy



Model Adjusted Ratios of Outcomes



Conclusions & Future Directions

- In this study, we found that patients with a **BMI >35** undergoing MIE or OE for esophageal malignancy had comparable outcomes. **We observed significantly improved LOS in patients who had MIE**. No significant differences were found between cohorts when examining 30 day- mortality, morbidity, and anastomotic leak
- Based on our study, **MIE demonstrates a similar safety profile to OE in obese patients** when examining a national cohort.
- Given the rising rates of obesity in the US in addition to its strong correlation with esophageal cancer, this population warrants further research into safe surgical options. This data may be used to guide future research into this population and clinical decision making on an individualized basis.

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