REOPERATIVE SURGERY AFTER MINIMALLY INVASIVE IVOR LEWIS ESOPHAGECTOMY (MILE)

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PURPOSE

- Reoperations after minimally invasive Ivor Lewis esophagectomy (MILE) impact surgical reoperations in both short- and long-term patient morbidity[1,2]
- The aim of this study is to determine factors associated with a series of patients undergoing totally MILE and the associated in-hospital, 30-day, and 90-day mortality, and hospital costs.

STUDY DESIGN

- Retrospective review between 2013-2018 of 125 patients.
- Reoperations, mortality, and hospital costs were evaluated
- Factors associated with reoperations were determined by multivariable logistic regression analysis.

DISEASE CHARACTERISTICS

	N = 125
Adenocarcinoma	94 (75)
Squamous cell carcinoma	25 (20)
Benign disease	6 (5)
Neoadjuvant therapy	107 (86)

DEMOGRAPHICS

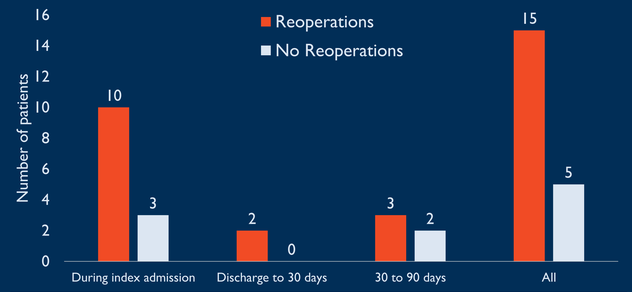
	N = 125
Age	68.0 [60.0-72.0]
Male	100 (80)
Tobacco use	101 (81)
Cardiovascular disease	33 (26)
Respiratory disease	45 (36)
Gastrointestinal disease	76 (61)
Chronic kidney disease	6 (5)
ASA 2	10 (8)
ASA 3	110 (88)
ASA 4	5 (4)

PROCEDURAL & POSTOPERATIVE DETAILS

	N = 125
Operative time (min)	363.0 [324.0-432.0]
Conversion to thoracotomy	7 (6)
Estimated blood loss (mL)	100.0 [50.0-200.0]
Lymph nodes harvested	19.0 [15.0-22.0]
R0 resection margin	123 (98)
Length of stay (days)	8.0 [7.0-10.0]
Clavien-Dindo major complications	26 (21)
Anastomotic leak	6 (5)
Graft necrosis	1 (1)

REOPERATIONS AFTER MILE

- In-hospital reoperations were associated with in-hospital mortality ($p<0.01$)
- Additional reoperations after discharge were not associated with patient mortality after discharge



Types of Surgical Reoperations

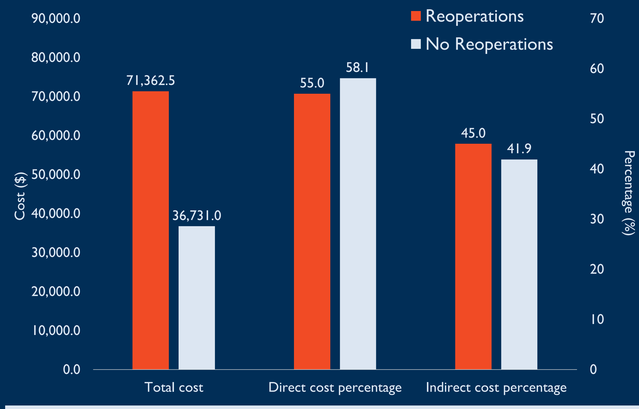
During index stay n=10	Discharge to 30 days n=2	30 to 90 days n=3
• Conduit volvulus, n=3 • Conduit redundancy, n=2 • Conduit obstruction, n=1 • Graft necrosis, n=1 • Small bowel infarction, n=2 • Delayed anastomosis due to bleeding, n=1	• Conduit detorsion, n=1 • Incision and drainage of infected chest wound, n=1	• Post-esophagectomy hernia repair, n=1 • Lung decortication for empyema, n=1 • Total colectomy for C. difficile colitis, n=1

Factors Associated With Reoperations

	Multivariable	
	Adjusted OR (95% CI)	*p*-value
Neoadjuvant therapy	0.50 (0.10-2.60)	0.41
Gastrointestinal comorbidity	3.37 (0.66-17.28)	0.15
Cardiovascular comorbidity	***4.45 (1.29-15.30)***	***0.02****
Chronic kidney disease	***15.62 (1.84-132.48)***	***0.01****

- Cardiovascular comorbidities and chronic kidney disease were independently associated with reoperations
- Anastomotic leak was not a predictor of reoperations (OR 0, p=1.0).

COST OUTCOMES



- Total cost per patient was significantly higher in the reoperation group versus the no reoperation group
- Indirect cost percent was higher in the reoperation group versus the no reoperation group

CONCLUSION

- The majority of reoperations after MILE occurred within 30 days frequently during index hospitalization.
- Reoperations were commonly performed to treat gastric conduit-related complications.
- Reoperations were associated with increased in-hospital mortality and hospital costs.
- Anastomotic leaks did not influence reoperations nor mortality.
- Efforts to optimize patient cardiovascular disease and chronic kidney disease should be emphasized to minimize the risk of reoperations.

1. Linden PA, Towe CW, Watson TJ, et al. Mortality after esophagectomy: analysis of individual complications and their association with mortality. J Gastrointest Surg. Published online 2019:1-7.
2. van der Schaaf M, Derogar M, Johar A, et al. Reoperation after oesophageal cancer surgery in relation to long-term survival: a population-based cohort study. BMJ Open. 2014;4(3).