

Outcomes Of 100 Consecutive Robotic And Minimally Invasive Ivor-Lewis Esophagectomy Without Pyloric Drainage

Kamil Abbas, Fazil Abbas, Ammar Zaidi, Ghulam Abbas, Sandeep Kashyap

OBJECTIVE

Various techniques are used for anastomosis during Ivor-Lewis Esophagectomy. Our preferred approach for esophagectomy is robotic-assisted MIE (RAMIE) **without** pyloric drainage using a 25-mm stapler. We reviewed our experience to examine the potential effects of these controversial surgical choices.

METHODS

We queried our prospective institutional database to assess the outcomes of 100 consecutive Ivor Lewis MIEs or RAMIEs performed. All MIEs and RAMIEs were completed using a narrow, straight gastric conduit without a pyloric drainage procedure or chemical injection. Each anastomosis was performed using the Orvil™ 25-mm EEA stapler (Medtronic) and covered with omentum.

Table 1. MIE vs RAMIE: Patient, tumor, and operative characteristics and perioperative outcomes

Characteristic	All patients N=100	RAMIE N=74	MIE N=26	p-value ^a
Sex, n (%)				0.546
Male	87 (87%)	66 (89.1%)	21 (80.8%)	
Female	13 (13%)	8 (10.8%)	5 (19.2%)	
BMI, kg/m², median (IQR)	27.2 (22.9, 31.1)	27.3 (22.9, 31.6)	25.7 (23.4, 29.4)	0.217
Follow up, months, median (IQR)	18 (8, 28)	15.5 (6.8, 24.2)	28.5 (18.2, 40)	0.001
Indication for esophagectomy, n (%)				0.379
Esophageal cancer	97 (97%)	73 (98.5%)	24 (92.3%)	
Adenocarcinoma	92 (94.8%)	69 (94.5%)	23 (95.8%)	
Squamous cell carcinoma	5 (5.1%)	4 (5.4%)	1 (4.1%)	
Benign Esophageal condition	3 (3.1%)	1 (1.3%)	2 (7.7%)	1.000
Induction therapy, n (%)				0.004
Induction Chemo only	6 (6.1%)	5 (6.7%)	1 (3.8%)	
Induction Chemo and Radiation	73 (75.2%)	57 (78%)	16 (66%)	
No. of LN harvested, median (IQR)	18 (14.3, 24)	19.5 (15.7, 29)	17 (13.3, 18)	0.001
Mean Procedure time, hours	5.47±0.84	5.33±1.01	5.47±0.84	0.521
Postoperative complications, n (%)				
Anastomotic leak	6 (6%)	5 (6.7%)	1 (3.8%)	1.000
Esophageal stricture requiring dilation	24 (24%)	16 (21.6%)	8 (30.8%)	0.705
Esophageal stricture requiring > 1 dilation	16 (16.0%)	8 (10.8%)	8 (30.8%)	0.069
Pyloric dilation	8 (8%)	6 (8.1%)	2 (7.7%)	0.005
Respiratory failure requiring tracheostomy	1 (1.1%)	1 (1.3%)	0	1.000
Atrial Fibrillation	4 (4%)	1 (1.3%)	3 (4.4%)	1.000
Pneumonia	5 (5%)	2 (2.7%)	3 (11.5%)	0.485
Chylothorax requiring ligation or embolization	2 (2%)	1 (1.3%)	1 (3.8%)	1.000
Length of hospital stay, median (IQR)	7 (6, 8)	7 (6, 8.25)	7 (6, 8)	0.965
30-Day Re-admission, n (%)	15 (15%)	7 (9.4%)	8 (30.8%)	0.067
30- Day Mortality, n (%)	1 (1%)	1 (1%)	0	1.000

^a Descriptive statistics were analyzed using chi-square tests and Fisher’s exact test for categorical variables and Wilcoxon tests and independent samples t-test for continuous variables. BMI, body mass index; Chemo, chemotherapy; IQR, interquartile range; LN, lymph node; MIE, minimally invasive esophagectomy; RAMIE, robotic-assisted minimally invasive esophagectomy.

RESULTS

During the study, 74 patients underwent RAMIE, and 26 underwent MIE (Table 1). Median length of stay was 7 days (IQR 6, 8) and median follow up was 18 months. (IQR 8,28). Eight patients (8%) required pyloric dilation during follow-up for non-specific swallowing problems. Six patients (6%) developed an anastomotic leak requiring endoscopic stent placement, and each was discharged tolerating oral diet within 48 hours. One patient who underwent RAMIE developed a broncho-esophageal fistula requiring tracheostomy. Anastomotic stricture requiring more than 1 dilation occurred in 16 patients (16%; 8 RAMIE [11%] vs 8 MIE [31%], p=0.069). Fifteen patients were readmitted within 30 days (15%; 7 RAMIE [9.4%] vs 8 MIE [31%], p=0.067).

CONCLUSIONS

In this single-institution series, a routine pyloric drainage procedure was not necessary to ensure adequate conduit drainage, and use of the Orvil™ 25-mm EEA stapler was not associated with increased anastomotic complications. The stricture rate was high, but strictures were easily managed.