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Hand-Assisted Laparoscopic Surgery Versus Laparoscopic Surgery for the Abdominal Approach in Esophageal Cancer
A Propensity Score Matching

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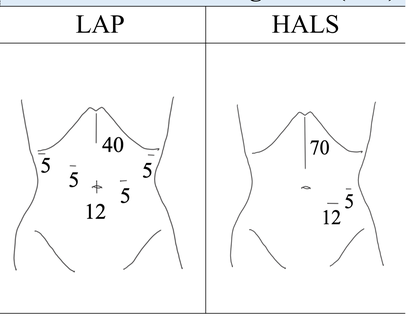
Background

・**The abdominal approach for esophageal cancer** is typically performed using either **hand-assisted laparoscopic surgery (HALS)** or **conventional laparoscopic surgery (LAP)**.

Incision & Port arrangement (mm)



Expected advantages & disadvantages

LAP	HALS
・Visibility ↑ ・Pain ↓ ・PPC ↓	・Tactile sensation ↑ ・Tissue manipulation ↑ ・Operative time ↓

PPC, Postoperative Pulmonary Complications

Aim

To **compare the short-term postoperative outcomes** of patients undergoing **esophageal cancer surgery with HALS versus LAP**, using **propensity score matching** to account for baseline differences.

Methods

・This retrospective analysis included **328 cases** who underwent esophageal cancer surgery at our department between January 2018 and July 2024.

・**The HALS group** comprised **136 cases**, while **the LAP group** included **192 cases**.

・**Propensity scores** were calculated using **multivariate logistic regression analysis** (stepwise method), **incorporating age, sex, BMI, clinical T and N factors, thoracic approach, and preoperative chemotherapy or chemoradiation as covariates**.

・Short-term outcomes, including **postoperative complications, hospital stay, and ICU stay duration**, were compared between the two groups.

Results

Patient and tumor characteristics (After PSM)

Covariates	HALS (n = 119)	LAP (n = 119)	p value
Age (years), mean ± SD	64.6 ± 9.4	64.7 ± 8.2	0.936
Sex (Male), n (%)	92 (77.3)	90 (75.6)	0.879
BMI (kg/m²), mean ± SD	21.5 ± 2.9	21.3 ± 3.0	0.598
cT stage*, n (%)			0.786
T1	41 (34.5)	45 (37.8)	
T2	23 (19.3)	17 (14.3)	
T3	49 (41.2)	51 (42.9)	
T4	6 (5.0)	6 (5.0)	
cN stage*, n (%)			0.425
N0	54 (45.4)	59 (49.6)	
N1	44 (37.0)	33 (27.7)	
N2	20 (16.8)	26 (21.8)	
N3	1 (0.8)	1 (0.8)	
Thoracic approach, n (%)			1.000
VATS	76 (63.9)	76 (63.9)	
Thoracotomy	5 (4.2)	4 (3.4)	
Robot-assisted	38 (31.9)	38 (31.9)	
Mediastinoscopy	0 (0.0)	1 (0.8)	
Preoperative chemotherapy, n (%)	63 (52.9)	62 (52.1)	1.000
Preoperative chemoradiotherapy, n (%)	10 (8.4)	8 (6.7)	0.807

*, TNM Classification of Malignant Tumors (7th)

Postoperative short-term outcomes

Outcomes	HALS (n = 119)	LAP (n = 119)	p value
Operative time (min), mean ± SD	531.9 ± 80.1	580.6 ± 80.5	**<0.001**
ICU stay (days), mean ± SD	2.48 ± 1.15	2.71 ± 2.10	0.284
Hospital stay (days), mean ± SD	24.3 ± 26.5	26.1 ± 25.7	0.597
Pneumonia, n (%)	11 (9.2)	21 (17.6)	0.086
Recurrent laryngeal nerve palsy, n (%)	7 (5.9)	10 (8.4)	0.616
Anastomotic stenosis, n (%)	1 (0.8)	2 (1.7)	1.000
Anastomotic leakage, n (%)	5 (4.2)	7 (5.9)	0.769
Cervical lymphorrhea, n (%)	9 (7.6)	5 (4.2)	0.41
Chylothorax, n (%)	6 (5.0)	13 (10.9)	0.15
Ileus, n (%)	0 (0)	0 (0)	N/A
Lymphorrhea, n (%)	1 (0.8)	0 (0.0)	1.000

・**Operative time was significantly longer in the LAP group than that in the HALS group.**

・**There were no significant differences in short-term postoperative outcomes aside from operative time.**

Conclusion

・The **LAP group takes significantly longer operative time than the HALS group.**

・However, this study found **no significant differences in short-term postoperative outcomes, including complications, hospital stay, and ICU stay, between HALS and LAP for abdominal approaches** in esophageal cancer surgery.

・The choice of surgical approach may therefore be guided **by patient characteristics, surgeon preference, and intraoperative conditions.**