



Comparison of laparoscopic surgery with or without hand assist for abdominal procedure after esophagectomy : A propensity score-matched analysis.

Department of Surgery, The Jikei University School of Medicine

Yuichiro Tanishima, Katsunori Nishikawa, Akira Matsumoto, Masami Yuda, Yujiro Tanaka, Fumiaki Yano, Norio Mitsumori, Katsuhiko Yanaga



Background

Esophagectomy is currently the best available treatment for patients with esophageal cancer. However, the surgical damage and postoperative complications associated with esophagectomy are comparable to those associated with other gastrointestinal surgeries. Similar to thoracoscopic esophagectomy, laparoscopy is also less invasive than open surgery for gastric mobilization and lymph node dissection.

Hand assisted laparoscopic surgery (HALS) and laparoscopic surgery (LAP) for mobilization of the gastric conduit and abdominal lymph node dissection among esophagectomy have become standard procedure in Japan.

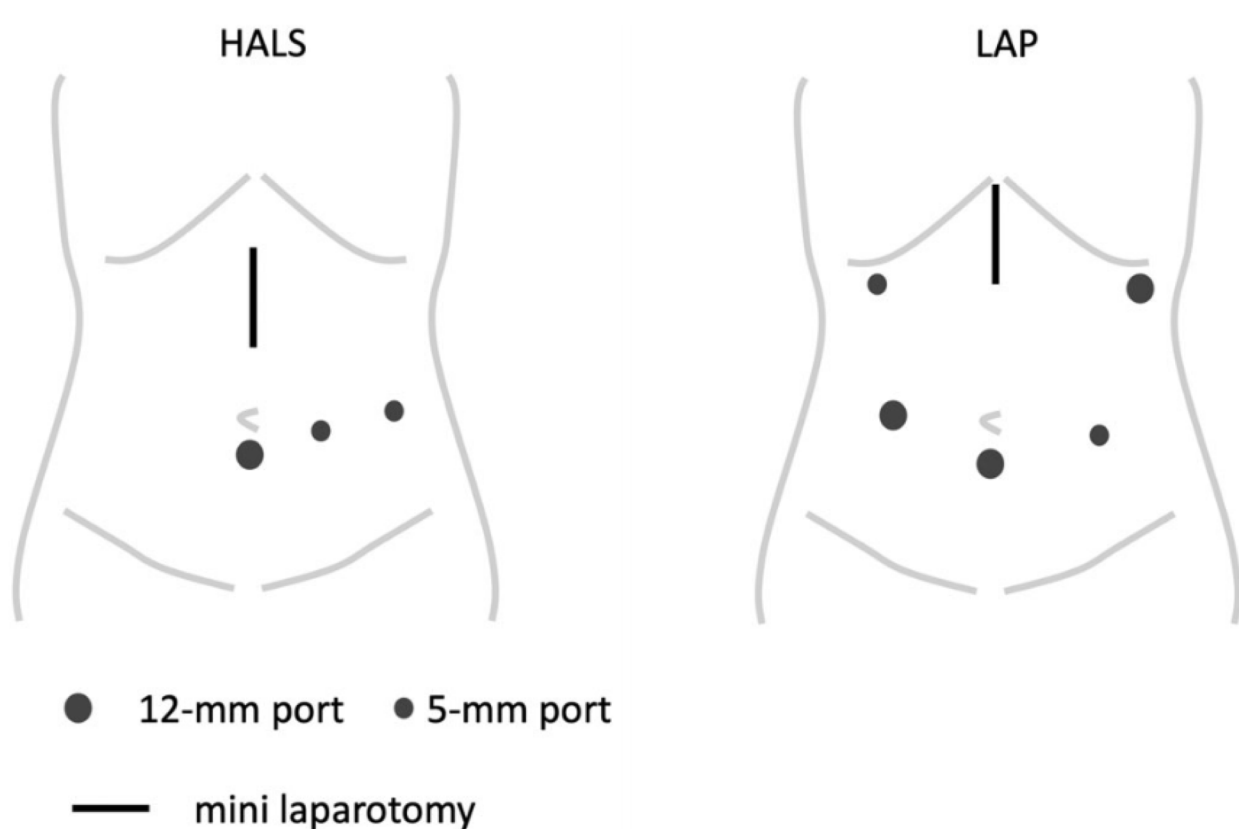
Aim

The aim of this study was to compare the safety and feasibility between HALS and LAP.

Methods

We analyzed the patients who underwent esophagectomy and reconstruction for clinical stage 0 to IVa esophageal cancer.

Outcomes in mortality, morbidity and long-term survival were compared between HALS and LAP by using propensity score matching to correct for differences in baseline characteristics.

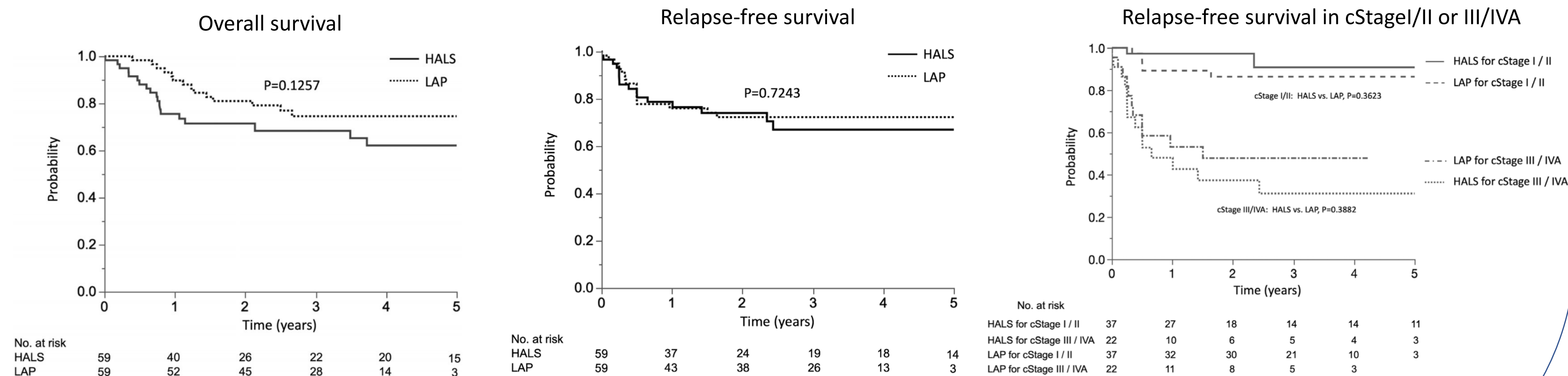


Results

Demographic and clinical characteristics of all patients and propensity score-matched patients						
	All patient			Propensity score-matched patients		
	Lap (n=63)	HALS (n=108)	P-value	Lap (n=58)	HALS (n=58)	P-value
Sex, n (%)			0.0217			0.8261
Male	46 (73.0%)	94 (87.0%)		44 (75.9%)	45 (77.6%)	
Female	17 (27.0%)	14 (13.0%)		14 (24.1%)	13 (22.4%)	
Age, year, mean±SD	67.1 ± 8.9	65.9 ± 7.5	0.3437	66.9 ± 9.1	67.2 ± 7.4	0.8331
Previous abdominal surgery, yes, n (%)	11 (15.9%)	17 (15.7%)	0.7694	11 (19.0%)	12 (20.7%)	0.8159
Tumor location, n (%)			0.6221			0.9826
Ut	7 (11.1%)	18 (16.6%)		6 (10.3%)	7 (12.0%)	
Mt	35 (55.6%)	50 (46.3%)		31 (53.5%)	31 (53.5%)	
Lt	15 (23.8%)	30 (27.8%)		15 (25.9%)	15 (25.9%)	
Ae	6 (9.5%)	10 (9.3%)		6 (10.3%)	5 (8.6%)	
Clinical stage, n (%)			0.4434			0.9823
O	1 (1.6%)	0 -		0 -	0 -	
I	27 (42.9%)	48 (44.4%)		26 (44.8%)	27 (46.6%)	
II	13 (20.6%)	17 (15.7%)		10 (17.2%)	11 (19.0%)	
III	14 (22.2%)	33 (30.6%)		14 (24.1%)	13 (22.4%)	
IVA	8 (12.7%)	10 (9.3%)		8 (13.8%)	7 (12.0%)	
SD: standard deviation						

Operative details and postoperative outcome			
	HALS (n=58)	LAP (n=58)	P-value
Operative time of abdominal section, minute, mean±SD	83.6 ± 26.2	110.6 ± 34.0	<0.0001
Open convert	1 (1.7%)	1 (1.7%)	1.000
Number of harvest abdominal lymph node, mean±SD	15.0 ± 0.9	18.0 ± 0.9	0.0214
Intra-abdominal complication (CD>Grade3a)	5 (8.6%)	7 (12.1%)	0.5420
Abcess	2	4	
Small bowel obstruction	2	1	
Hiatal hernia	0	1	
Necrosis of gastric conduit	1	0	
Chylous ascites	0	1	
Anastomotic complication			
Leakage	7 (12.1%)	3 (5.2%)	0.1858
Stenosis	14 (24.1%)	12 (20.7%)	0.6561
Postoperative length of stay, day, mean±SD	37.5 ± 32.1	32.4 ± 33.6	0.4021
30 days mortality	-	-	

SD: standard deviation. CD: Clavien Dindo classification



Discussion

➤ **The operative time in the HALS group was significantly shorter than that in the LAP group.**

This is because it is possible to maintain a good operative view during HALS by grasping the stomach, and the time required by the replacement of forceps via is trocars reduced. Furthermore, in LAP, the procedure is performed without grasping the stomach to prevent damage to the stomach and gastro-epiploic vessel. The lack of intraoperative complications such as twisting of or injury to the stomach are a result of the gentle manipulation of the stomach, which is possible in HALS. Our results seem to indicate that HALS is atraumatic, protects the stomach against surgical manipulation, and provides a shorter operative time than LAP.

➤ **The number of harvested abdominal lymph nodes was lower in the HALS group than in the LAP group.**

➤ **There were no significant differences in 5-year OS and RFS between the two groups.**

Son et al. reported that examination of an insufficient number of lymph nodes for gastric cancer worsened the survival prognosis. In this study, however, the difference in the number of lymph nodes did not have the same outcome. Although the number was significantly smaller in HALS group, the outcome was comparable with LAP group. An important zone for lymph node dissection could contribute to these discrepancies. Initially, in gastric cancer, lymph node metastasis occurs to the perigastric nodes and around the feeding vessels. However, in esophageal cancer, the frequency of lymph node metastasis around the celiac artery is low. Thus, HALS may be able to provide the optimal number of lymph nodes for evaluation in esophageal cancer.

➤ **There were no significant differences in the occurrence of abdominal complications between the two groups. However, the incidence of intra-abdominal abscess was conspicuous in the LAP group.**

The difference might be due to more micro-damage is inflicted by forceps in the LAP group than in the HALS group. The cause of small bowel obstruction in HALS was seemed to button-typed jejunostomy for enteral nutrition.

Conclusion

➤ **HALS as a combination of laparoscopic surgery with hand tactile sensation is useful.**
➤ **Our results indicate that HALS is a technically feasible procedure with a short operative time, and that it is oncologically safe in patients with esophageal cancer.**

Reference

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