Outcome of gastric conduit reconstruction after esophagectomy - a comparison between hand-assisted laparoscopic surgery and laparoscopic surgery

2023 SAGES Annual Meeting
Montreal, Canada March 29 - April 1, 2023
Poster session (P396)

Kohei Kanamori, Kohei Tajima, Kentaro Yatabe, Yoshiaki Shoji, Miho Yamamoto, Akihito Kazuno, Kazuo Koyanagi
Department of Gastroenterological Surgery, Tokai University School of Medicine

Background and Aims

In recent years, laparoscopic surgery has been widely used in gastric conduit reconstruction during esophagectomy. In our institute, we have introduced the use of hand-assisted laparoscopic surgery (HALS) since 2010 and laparoscopic surgery (LAP) since 2018. While HALS allows for patently grasping the stomach, we have experienced that the operative field is limited due to the inserted left hand, and that it is difficult to confirm fine anatomy. LAP is now actively used considering the advantage of developing visual field during dissection of the suprapancreatic lymph nodes (LNs) and the LNs near the right diaphragmatic crus.

Methods

We included 611 patients who underwent thoracic esophagectomy and gastric conduit reconstruction and neck anastomosis for esophageal cancer at our hospital between April 2010 and November 2021. Of these patients, we performed propensity-score matching using age, sex, BMI, histological type, and cStage to compare surgical outcomes between HALS and LAP reconstruction.

Surgical procedure

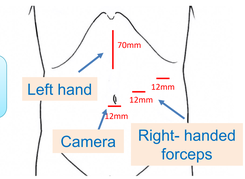
Port layout

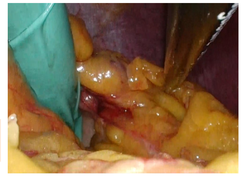
Surgical field

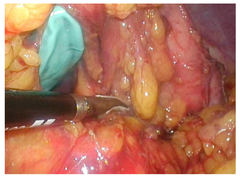
Incision of omentum

Dissection of suprapancreatic LNs

HALS

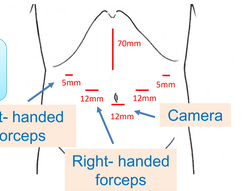


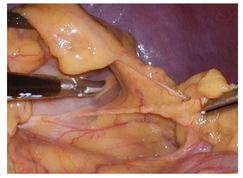


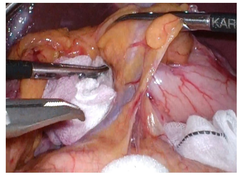


While the HALS allows gentle grasping of the stomach, it is difficult to secure space in the abdominal cavity

LAP







LAP allows visibility of the right gastroepiploic artery and a large space during dissection of the suprapancreatic LNs.

Results

Patient clinical characteristics

Before matching

	HALS (n=243)	LAP (n=75)	*p*
Age (year, median, range)	67.5 (26-83)	71 (46-84)	0.005
Sex			0.79
Male	201	63	
Female	42	12	
BMI (kg/m^2, median, range)	21.5 (14.6-31.8)	21.6 (14.6-29.0)	0.53
Histology			0.11
SCC	224	65	
Adenocarcinoma	19	10	
Location of tumor			0.08
Ut	35	12	
Mt	132	35	
Lt	71	22	
EGJ	5	6	
cStage (UICC 8th)			0.35
I	97	29	
II	43	16	
III	81	20	
IVA	4	4	
IVB	17	6	

After matching

	HALS (n=75)	LAP (n=75)	*p*
Age (year, median, range)	68 (45-83)	71 (46-84)	0.07
Sex			0.50
Male	64	63	
Female	11	12	
BMI (median, range, kg/m^2)	21.0 (15.2-29.3)	21.6 (14.6-29.0)	0.22
Histology			0.50
SCC	66	65	
Adenocarcinoma	9	10	
Location of tumor			0.09
Ut	7	12	
Mt	46	35	
Lt	20	22	
EGJ	2	6	
cStage (UICC 8th)			0.41
I	35	29	
II	15	16	
III	21	20	
IVA	2	4	
IVB	2	6	

Surgical outcome

	HALS (n=75)	LAP (n=75)	*p*
Abdominal operation time (min, median)	93.0	110.0	0.001
Abdominal bleeding (median, ml)	257	206	0.09
The number of abdominal LNs (average)			
All	13.1	14.2	0.16
#1 (right paracardinal LNs)	2.8	2.5	0.91
#2 (left paracardinal LNs)	2.9	3.0	0.82
#3 (lesser curvature LNs)	3.8	5.0	0.03
#7 (LNs along the left gastric artery)	2.8	2.4	0.22
#9 (LNs along the celiac artery)	1.7	1.9	0.93

	HALS (n=75)	LAP (n=75)	*p*
Intraoperative complication	0 (0%)	0 (0%)	N.A.
Postoperative complication			
All	44 (54%)	37 (42%)	0.25
Suture failure	12 (28%)	10 (11%)	0.81
SSI	5 (7%)	4 (6%)	0.73
Pancreatitis	0 (0%)	2 (4%)	0.15
Bowel obstruction	1 (2%)	0 (0%)	0.31
Hospital stay (day, median)	25	20	0.004

Discussion

- While HALS can prevent submucosal hematoma and serous membrane damage of the gastrointestinal tract by gently grasping the stomach, it is difficult to confirm fine anatomy because of the large grasp of the tissues and the field of view.
- The complete laparoscopic surgery is considered to be a safe technique because it allows visualization of fine anatomy, including the right gastroepiploic artery.
- In this study, there were no intraoperative complications in the LAP group, including gastric conduit injury or right gastric aortic arch injury, and no increase in postoperative complications compared with HALS.
- The number of abdominal LNs dissected was significantly higher in the LAP group, especially #3 LN (lesser curvature LNs).
- The laparoscopic approach was effective in terms of safety and certainty.

Conclusions

There was no difference in safety of LAP compared to HALS in gastric conduit reconstruction. LAP may be more effective in LN dissection due to its superior surgical field.

Disclosure

We have no financial conflicts of interest to disclose concerning the presentation.

TOKAI UNIVERSITY