Master's Thesis of Medicine

Clinical outcomes of endoscopic submucosal dissection for early gastric cancer in patients with co-morbidities

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Abstract

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Background and Aims: As endoscopic resection for early gastric cancer (EGC) has increased in patients with co-morbid diseases, it has been needed to elucidate the efficacy of endoscopic submucosal dissection (ESD) for EGC in patients with co-morbid diseases. The purpose of this study was to analyze the clinical outcomes after ESD for EGC in patients with co-morbid diseases.

Methods: A total of 969 patients with 1015 lesions who underwent ESD for EGC in Seoul National University Hospital between 2010 to 2014 were analyzed. Short and long-term clinical outcomes were evaluated according to the status of co-morbidities.

Results: Co-morbidities were combined in 558 patients (57.6%). Patients using antithrombotics were more common in the co-morbidity group (29.5% vs. 0.9%; P<0.0001). Although the procedure-related complications (bleeding and perforation) were not significantly different between the two groups, the hospital stay was significantly longer (1.8 vs. 1.4 days; P=0.023), and the survival was significantly shorter in the co-morbidity group (5-year overall survival rate 97.3% in previous healthy group, 93.8% in mild disease group and 74.7% in moderate to severe disease group; P<0.0001, 5-year disease-specific survival rate 100%, 98.5% and 95.2%; P=0.016, 5-year disease-free survival rate 89.2%, 86.4% and 70.7%; P=0.001).

Conclusions: ESD could be performed with a comparable risk of complications even for patients with co-morbid

conditions. As the long-term survival was significantly lower in the patients with co-morbidities, meticulous follow-up is mandatory for the patients with co-morbidities.

Keywords : Endoscopic submucosal dissection, Early gastric cancer, Co-morbidities, Clinical outcomes

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Chapter 1. Introduction

According to GLOBOCAN data, the incidence rate of gastric cancer in 2018 was the 5th, and the mortality rate was 3rd in all malignancies in the world [1]. According to National Cancer Information Center, the incidence rate of gastric cancer in Korea was the 1st, and the cancer mortality was 4rh in 2018 [2]. Since Korean National Cancer Screening Program had been implemented in 1999, early detection of gastric cancer has been increasing by upper gastrointestintal endoscopy or barium study [3].

According to Korean practice guideline for gastric cancer 2018, endoscopic resection has been regarded as a definitive treatment modality for early gastric cancer (EGC) in the indicated cases [4]. Since 2000, endoscopic submucosal dissection (ESD) has been a standard endoscopic treatment for the indicated cases with EGC as a minimally invasive procedure with negligible risk of recurrence rate and lymph node and/or distant metastasis, low post-procedural complication, and high en-bloc resection rate [5-8].

Korea is a rapidly aging country globally, and the prevalence of chronic diseases is inevitably increasing. In worldwide, 41million people die from chronic diseases every year, accounting for 71% of all deaths, and the annual mortality for chronic diseases in Korea is 235 thousand, accounting for 80% of all deaths [9]. At the distribution

of at least one doctor-diagnosed chronic disease among Koreans, 68.7% in their 50s, 83.7% in their 60s, and 91.3% in their 70s or older [10].

As ESD has been increasing for EGC, endoscopic procedures have also increased for patients with old-age and/or co-morbidities. In the previous studies for the group with co-morbidity, the clinical outcomes were analyzed by dividing the groups using a physical severity assessment tool such as the Charlson co-morbidity scale or ASA-PS classification [10-13]. As a result, short-term clinical outcomes were not significantly different between groups, whereas long-term clinical outcomes showed a higher mortality rate in the co-morbidity group. In this study, we aimed to compare and analyze the procedure-related and non-related short and long-term clinical outcomes between the group with co-morbidities that might affect the general conditions and the previous healthy group, and the analyses were not limited by the physical severity assessment tool.

Chapter 2. Methods

2.1. Participants

This study was a retrospective review to study the efficacy of ESD for EGC in patients with co-morbid diseases. Patients who had undergone ESD for EGC at Seoul National University Hospital between 2010 and 2014 were reviewed. Co-morbidities were defined as follows with ICD-10 codes: (1) hypertension (I10-I16), (2) diabetes (E08-E14), (3) chronic kidney disease-highest value of last 2 eGFR <60mL/min (N18), (4) chronic liver disease and viral hepatitis (K70-K77, B15-B19), (5) coronary heart disease (I20-I25), (6) stroke and transient ischemic attack (I60-I67, G45), (7) cancers diagnosed in last 5 years - excluding non-melanoma skin cancer (C00-C96 except C44, C4A; C16). According to severity, the above diseases were classified into 2 subgroups as mild and moderate to severe disease groups. Criteria of moderate to severe diseases are (1) hypertension with target organ damage (I11-I16), (2) diabetes with complication (E11.2-E11.8), (3) chronic kidney disease - stage 4 and 5 (N18.4, N18.5), (4) liver cirrhosis (K75.1-K74.6), (5) unstable angina and infarction (I20-I25), (6) NIHSS>4, mRS>2, (7) untreated cancer at the time of ESD. The patients with current pregnancy, history of the previous gastrectomy or endoscopic resection, or missing data were

excluded in the analysis.

This study was approved by Institutional Review Board at Seoul National University Hospital (H-1912-067-1088) and conducted in accordance with the Helsinki Declaration.

2.2. ESD procedure

ESD was performed under conscious sedation with midazolam and/or propofol and cardiopulmonary monitoring. Using a standard single-channel endoscope (Olympus H260, Olympus Optical), marking was made at 5 mm outside of the lesion using needle knife (KD- 1L; Olympus) with a forced 20-W coagulation current (VIO 300D; Erde, Tübingen, Germany). Then, a mixed solution of normal saline, diluted epinephrine (1:100,000), and indigo carmine were injected into the submucosal layer to create a submucosal cushion, and a small initial incision was made with a needle-knife. After that, circumferential mucosal incision and submucosal dissection were made using an insulation-tipped knife (Kachu Technology Co. Ltd., Seoul, Korea). Finally, hemostasis was performed with coagrasper for any oozing or exposed vessel during and after the procedure. Procedure time was reported from the start of mucosal marking to the end of hemostasis. Post-ESD bleeding was defined as one or more of the following

signs of bleeding such as hematemesis or melena, unstable vital signs or a drop of hemoglobin > 2 g/dL, or a requirement for endoscopic hemostatic treatment after the completion of the procedure. The signs within 24 hours were defined as immediate post-ESD bleeding, and after 24 hours as delayed bleeding. Immediate perforation associated with the ESD procedure was diagnosed endoscopically during the procedure or as pneumoperitoneum by chest radiography, and delayed perforation was confirmed endoscopically or detected by chest radiography after the procedure.

2.3. Histopathological evaluation

According to the Japanese Classification of Gastric Carcinoma, the macroscopic types of the EGC lesions were grouped as elevated (0-I and O-IIa), flat (0-IIb), and depressed (0-IIc and 0-III), also the locations of the lesions were divided into three portions, upper, middle and lower parts [14]. The resected specimens were promptly stretched and pinned on a flat polystyrene board to prevent folding and fixed in 10% formalin. For histologic evaluation, the fixed specimens were serially sectioned at 2-mm intervals. The histologic type, degree of differentiation, tumor size, invasion depth, tumor involvement in margin, and lympho-vascular invasion were assessed according to the JCGC. During the procedure, a biopsy specimen was taken from the

antrum and body to evaluate the status of *Helicobacter pylori* (*H..pylori*) infection, mucosal atrophy, and intestinal metaplasia. Mucosal atrophy and intestinal metaplasia were histologically graded into (0=none, 1=mild, 2=moderate, and 3=marked), and grouped into none (0 and 1) and present (2 and 3) by Updated Sydney System [15].

En-bloc resection was defined as a resection of tumor in one piece. Absolute histologic criteria for a curative resection were en-bloc resection, no lymphovascular involvement, and differentiated mucosal cancer of 2 cm and less without ulcer. In addition, the expanded criteria for a curative resection was defined as (1) differentiated mucosal cancer >2 cm in size without ulceration, (2) differentiated mucosal cancers ≤ 3 cm in size with ulceration, (3) differentiated minute submucosal cancers within 500 mm of the muscularis mucosa and ≤3 cm in size, and (4) undifferentiated mucosal cancer ≤ 2 cm in size without ulceration. Histological outcomes that do not meet the above criteria were defined as non-curative resection.

2.4. Follow-up

After ESD, chest radiography was taken to confirm

perforation. To prevent bleeding, a proton-pump inhibitor was injected intravenously after the procedure, and oral medication was prescribed for 6 weeks to promote ulcer healing. *H. pylori* eradication was administered to the patients with *H. pylori* infection. Follow-up surveillance endoscopy, abdominal computerized tomography, and chest radiography were performed every 6 months for 1 year and then annually.

2.5. Outcome assessment

In this study, local recurrence was defined when cancer recurred at the treated site, synchronous recurrence when cancer recurred at another site within 12 months, and metachronous recurrence when cancer recurred at another site after 12 months. Overall survival was a measure of the period from ESD for EGC to all-cause death. Disease-specific survival was a measure of the time after the procedure to death associated with gastric cancer. Disease-free survival was measured from ESD to tumor recurrence/ distant metastasis, or all-cause death. The tumor recurrence included local recurrence, synchronous, and metachronous gastric cancer. Patients who dropped out of follow-up were censored on the day of the last follow-up.

2.6. Statistical methods

Demographic information was compared by t-test, χ2 test between two independent groups. Survival rates were calculated using the Kaplan-Meyer method. All tests of statistical tests were two-tailed, and p-values < 0.05 were considered statistically significant. Statistical analyses were conducted using SPSS software, version 26 for Windows (IBM Corporation, Armonk, NY, USA).

Chapter 3. Results

3.1. Baseline characteristics

A total of 969 patients with EGC had undergone ESD, of whom 558 patients had co-morbidities. Mean age was significantly higher in the group with co-morbid diseases (P<0.0001). The use of antithrombotic agents was significantly frequent in the group with co-morbid disease (P<0.0001). Family history of gastric cancer was less frequent (P=0.008), and follow-up duration was significantly shorter in the group with co-morbid disease (P=0.003). However, sex, histologic type of the lesion, histologic type by Lauren, tumor size, location, gross type, depth of tumor invasion, mucosal atrophy, and intestinal metaplasia did not significantly differ between the two groups (Table 1).

The 558 co-morbidity patients were divided into 428 mild and 88 moderate to severely diseased patients, except for 42 who lacked data to divide by severity. Mean age was significantly higher in the group with moderate to severe diseases (P=0.034). The use of antithrombotic agents was significantly frequent in the group with moderate to severe diseases (P=0.013) and other variables did not differ between the two subgroups (Table 2).

The most common co-morbidity was hypertension, followed by

diabetes, chronic liver disease and viral hepatitis, newly diagnosed cancer in the last 5 years (excluding non-melanoma skin cancer), coronary heart disease, stroke, transient ischemic attack, and chronic kidney disease (highest value of last 2 eGFR < 60 mL/min) (Figure 1).

3.2. Clinical outcomes of ESD

Procedure time, en-bloc and curative resection rates were not significantly different between the two groups. In addition, the recurrence rate (P=0.395) and the procedure-related complication rate (P=0.462) did not show a significant difference. Although procedure-related fever and aspiration pneumonia did not show a significant difference between the two groups, the hospital stay was significantly longer in the group with co-morbidities (P=0.023) (Table 3). The only clinical outcome variable that significantly different at the subgroup analysis was fever (P=0.020) (Table 4).

3.3. Survival analysis

Overall 5-year survival rate was 97.3% in the previous healthy group, 93.8% in the mild disease group and 74.7% in the moderate to severe disease group, respectively (P<0.0001). The mean duration of

survival was 116.3 months, 112 months and 94.3 months, respectively, which was higher in the previous healthy group. Five-year disease-specific survival rates were 100%, 98.5% and 95.2% (P=0.016), and 5-year disease-free survival rates were 89.2%, 86.4% and 70.7% (P=0.001), respectively, which were significantly lower in the co-morbidity group (Figure 2).

There were a total of 10 cases of gastric cancer-caused death, and the medical characteristics was reviewed (Table 5).

Chapter 4. Discussion

Since ESD has been regarded as a safe therapeutic modality to perform, its indication has been expanded into patients with co-morbidities or of old age as well as tumors in expanded criteria. Patients with co-morbid diseases tend to be older and may use more antithrombotic drugs according to their characteristics. As co-morbidity or use of antithrombotic drugs might result in increased risk of post-procedural complications and/or compromised survival, we aimed to compare the efficacy and safety of ESD between previous healthy and co-morbidity group.

Stomach cancer is the most distributed cancer among 35 to 64-year-old men and women over 65 in Korea, and the incidence rate increases with age [2]. The mean age in the co-morbidity group was higher than in the previous healthy group, which might result from common distribution of co-morbidities in old-aged patients. In a previous study, en bloc resection and complication rate in elderly patients more than 75 years old were not significantly different from those of younger patients [16]. In another study, short-term clinical outcomes such as adverse events and curability were not different between the groups with or without frailty over age of 80 [17]. However, long-term clinical outcomes were worse in patients with frailty than those without frailty. It was also reported that procedure

time, hospital stay, procedure-related complications, en-bloc and complete resection rate, and delayed bleeding were not significantly different between elderly (more than 80 years old) and non-elderly group [18]. However, procedure time with preventive hemostasis was significantly higher in the elderly group. Based in these data, ESD has been considered to be a safe procedure even for the elderly group.

To reduce and prevent thromboembolic events in cerebrovascular and cardiovascular diseases, the use of antithrombotic drugs such as antiplatelets and anticoagulants has been increasing worldwide. Among the patients included in this study, cardiovascular diseases such as hypertension, stroke, TIA, and coronary heart disease were the most common co-morbidities, and the number of patients using antithromnotic agents was significantly higher in the co-morbidity group. Although post-procedural bleeding might be higher in the co-morbidity group with frequent use of antithrombotics, there was no significant difference in the risk of complication between two groups in this study, which might result from disappearance of risk of adverse event by discontinuation of antithrombotics around ESD. Moreover, use of antiplatelet or thienopyridine did not increase the risk of bleeding after ESD either in the previous retrospective studies [19, 20].

In short-term clinical outcomes, there were no significant differences in procedure time, en-bloc resection rate, curative resection rate, and procedure-related complications between the two

groups. It has been reported that there were no significant differences in procedure time, en-bloc resection rate, curative resection rate, and complication between the high-risk group with co-morbid diseases and low-risk group without co-morbid diseases based on the Charlson co-morbidity scale [11]. Also, short-term outcomes were not significantly different in terms of aspiration pneumonia, arrhythmia, delirium, and ischemic heart attack between the groups according to co-morbidities by ASA physical status classification [12, 13]. However, hospital stay was lengthened in the co-morbidity group by additional management of underlying diseases. In this study, fever was significantly higher in moderate to severe disease group, but the severity could not be defined as the cause of fever. In the medical record, the cause of fever was mentioned as procedure-related transient bacteremia. This correlation requires further study.

In long-term clinical outcomes, mean follow-up duration was significantly lower in the co-morbidity group. As 5-year overall survival and disease-free survival rate were significantly associated with co-morbid diseases, follow-up duration might be influenced by survival rate from the status of co-morbid diseases as well as EGC itself. In a previous study, 5-year overall survival was significantly lower in the severe co-morbid diseases group than the group with no or mild co-morbid diseases [13]. In this study, disease-specific survival was significantly higher in the co-morbidity groups than the previous healthy group. To find additional variables that could explain the difference in disease-specific survival, there was no difference in

non-curative resection, additional treatment after non-curative resection, and overall gastric cancer surgery rate when comparing the groups. This difference seems to be due to the distribution of a small number of patients, not the co-morbidity status.

This study has several limitations. First, this is a retrospective study conducted in a single-center. A prospective study might be beneficial to evaluate further the validity of ESD for EGC in patients with co-morbid diseases. However, it is believed that this study presents reliable results with higher number of patients ever than previous studies. Second, most of the co-morbid diseases were confirmed by the history taking from the patients. Therefore, there is a possibility of classification bias in this study.

In conclusion, ESD could be performed with a comparable risk of complications even for patients with co-morbid conditions. As long-term survival was significantly lower in the patients with co-morbidities, meticulous follow-up is mandatory for the patients with co-morbidities.

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Table 1. Baseline characteristics between the groups with and without co-morbidities

	Previous healthy group (n=411)	Co-morbidity group (n=558)	*P*-value
Age, year	60.8±9.7	66.3±9.2	0.0001
Sex, M:F	268 (65.4):142 (34.6)	380 (68.1):178 (31.9)	0.372
Family history of gastric cancer	80 (19.6)	74 (13.3)	0.008
Use of Antithrombotics	5 (0.9)	180 (29.5)	0.0001
H. pylori status			0.020
Negative	88 (24.1)	125 (29.4)	
Persistent	121 (33.2)	139 (32.7)	
Eradicated	127 (34.8)	111 (26.1)	
Un-evaluated	29 (7.9)	50 (11.8)	
Histologic type			0.535
Differentiated	377 (92.0)	519 (93)	
Un-differentiated	33 (8.0)	39 (7.0)	
Histologic type by Lauren			0.372
Intestinal	382 (93.4)	527 (95.3)	
Diffuse	17 (4.0)	16 (3.1)	
Mixed	10 (2.6)	9 (1.6)	
Tumor size (mm)	17.6±10.4	18.4±12.1	0.286
Location of tumor			0.299
Upper	13 (3.2)	11 (2.0)	
Middle	143 (35.0)	180 (32.3)	
Lower	253 (61.9)	366 (65.7)	
Gross type			0.242
Elevated	59 (14.5)	73 (13.1)	
Flat	67 (16.5)	73 (13.1)	
Depressed	281 (69.0)	410 (73.7)	
Depth of tumor invasion			0.662
Mucosa	348 (84.9)	467 (83.8)	
Submucosa	62 (15.1)	90 (16.2)	
Antral mucosal atrophy			0.358
No	174 (49.4)	184 (45.0)	
Yes	51 (14.5)	57 (13.9)	
Non-applicable	127 (36.1)	168 (41.1)	
Antral intestinal metaplasia			0.559
No	173 (49.1)	202 (49.4)	
Yes	178 (50.6)	207 (50.6)	
Non-applicable	1 (0.3)	0 (0.0)	

Body mucosal atrophy			0.750
No	174 (49.6)	213 (52.1)	
Yes	64 (18.2)	74 (18.1)	
Non-applicable	113 (32.2)	122 (29.8)	
Body intestinal metaplasia			0.881
None	202 (57.5)	237 (58.1)	
Mild	149 (42.5)	171 (41.9)	
Follow-up duration	69.7±30.9	63.4±32.0	0.003

Table 2. Baseline characteristics subgroup analysis according to disease severity

	Mild (n=428)	Moderate to severe (n=88)	*P*-value
Age, year	65.8±9.2	68.1±9.3	0.034
Sex, M:F	284 (66.4):144 (33.6)	66 (75.0):22 (25.0)	0.114
Family history of gastric cancer	64 (15.0)	6 (6.9)	0.046
Use of Antithrombotics	117 (27.5)	36 (40.9)	0.013
H. pylori status			0.266
Negative	99 (29.6)	13 (21.7)	
Persistent	109 (32.5)	25 (41.7)	
Eradicated	92 (27.5)	13 (21.7)	
Un-evaluated	35 (10.4)	9 (15.0)	
Histologic type			0.266
Differentiated	394 (92.1)	84 (95.5)	
Un-differentiated	34 (7.9)	4 (4.5)	
Histologic type by Lauren			0.502
Intestinal	403 (94.8)	84 (97.7)	
Diffuse	14 (3.3)	1 (1.2)	
Mixed	8 (1.9)	1 (1.2)	
Tumor size (mm)	18.6±12.1	17.8±12.8	0.587
Location of tumor			0.379
Upper	8 (1.9)	2 (2.3)	
Middle	131 (30.6)	33 (37.9)	
Lower	289 (67.5)	52 (59.8)	
Gross type			0.792
Elevated	54 (12.7)	12 (13.6)	
Flat	53 (12.4)	13 (14.8)	
Depressed	319 (74.9)	63 (71.6)	
Depth of tumor invasion			0.487
Mucosa	356 (83.4)	76 (86.4)	
Submucosa	71 (16.6)	12 (13.6)	
Antral mucosal atrophy			0.827
No	147 (45.7)	24 (41.4)	
Yes	43 (13.4)	8 (13.8)	
Non-applicable	132 (41.0)	26 (44.8)	
Antral intestinal metaplasia			0.710
No	164 (50.9)	28 (48.3)	
Yes	158 (49.1)	30 (51.7)	
Body mucosal atrophy			0.699
No	168 (52.3)	29 (50.0)	

Yes	59 (18.4)	9 (15.5)	
Non-applicable	94 (29.3)	20 (34.5)	
Body intestinal metaplasia			0.550
None	190 (59.4)	32 (55.2)	
Mild	130 (40.6)	26 (44.8)	
Follow-up duration	66±29.1	66.1±33.9	0.987

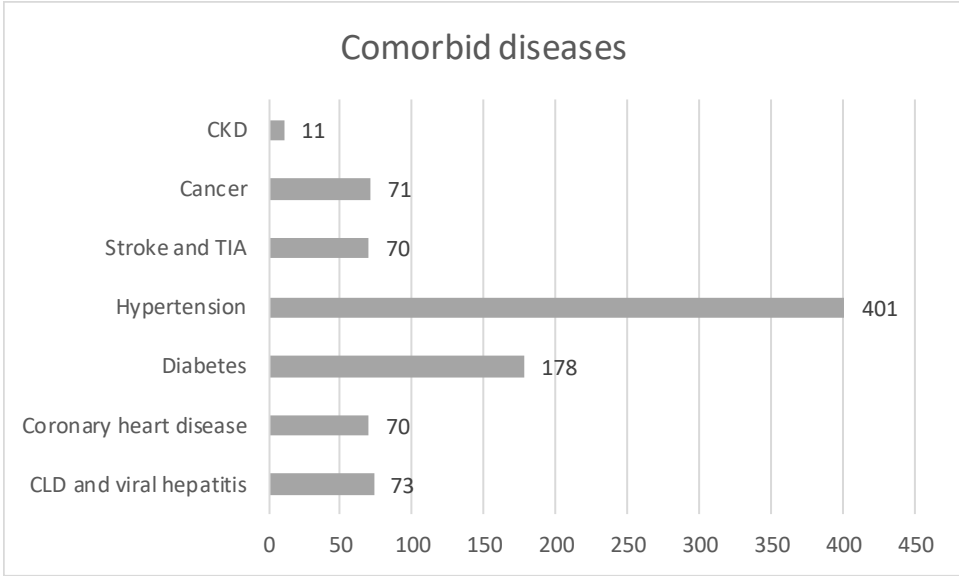


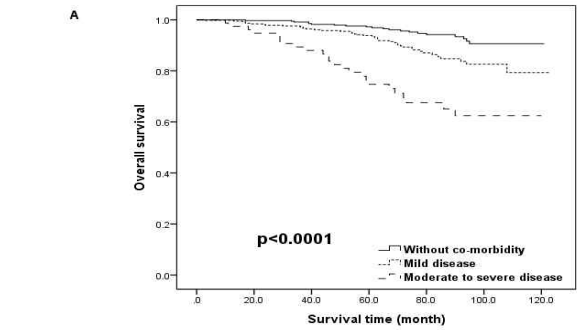
Figure 1. Prevalence of co-morbid diseases. Cardiovascular disease and diabetes mellitus are more common than other diseases. CKD, chronic kidney disease; TIA, transient ischemic attack

Table 3. Clinical outcomes between the groups

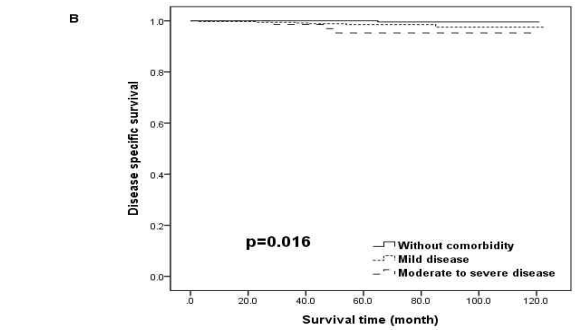
	Previous healthy group	Co-morbidity group	P-value
Procedure time	21.5±15.8	20.6±17.9	0.435
En-bloc resection	404 (98.8)	553 (99.6)	0.119
Curative resection	323 (78.8)	456 (81.7)	0.254
Recurrence			0.395
Local recurrence	27 (7.5)	24 (5.0)	
Synchronous cancer	3 (0.8)	7 (1.5)	
Metachronous cancer	13 (3.6)	20 (4.2)	
Procedure related complication	47 (11.4)	75 (13.5)	0.462
Post-ESD bleeding	21 (5.1)	26 (4.7)	0.750
Perforation	5 (1.2)	5 (0.9)	0.627
Fever	29 (7.1)	51 (9.2)	0.243
Aspiration pneumonia	0 (0.0)	2 (0.4)	0.511
Hospital stay	1.4±0.73	1.8±4.11	0.023

Table 4. Clinical outcomes subgroup analysis according to disease severity

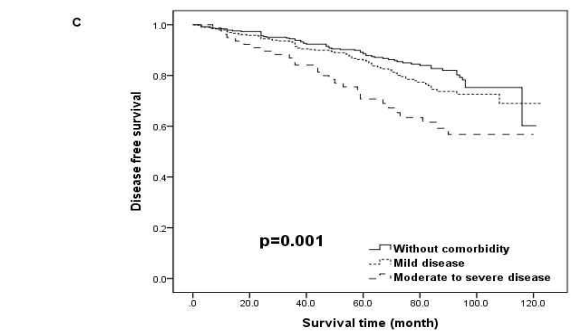
	Mild	Moderate to severe	P-value
Procedure time	20±14.2	21.3±19.4	0.471
En-bloc resection	426 (99.8)	86 (100.0)	1.000
Curative resection	346 (80.8)	77 (87.5)	0.139
Recurrence			0.712
Local recurrence	16 (4.3)	5 (6.9)	
Synchronous cancer	6 (1.6)	1 (1.4)	
Metachronous cancer	17 (4.6)	2 (2.8)	
Procedure related complication	52 (12.2)	18 (38.5)	0.235
Post-ESD bleeding	19 (4.5)	5 (5.7)	0.621
Perforation	3 (0.7)	2 (2.3)	0.204
Fever	35 (8.2)	14 (16.3)	0.020
Aspiration pneumonia	2 (0.5)	0 (0.0)	1.000
Hospital stay	1.7±4.6	2.3±2.4	0.285



No. at risk							
Without co-morbidity	387	355	323	328	176	64	1
Mild disease	402	360	320	270	139	44	1
Moderate to severe disease	82	71	63	45	36	17	0



No. at risk							
Without comorbidity	387	355	323	292	176	64	1
Mild disease	402	360	320	270	139	44	1
Moderate to severe disease	82	71	63	45	36	17	0



No. at risk							
Without comorbidity	387	347	306	273	157	53	1
Mild disease	402	353	305	255	127	36	1
Moderate to severe disease	82	68	60	42	34	16	0

Figure 2. Kaplan-Meier plots for (A) Overall survival, (B) Disease-specific survival, and (C) Disease free survival in the patients.

Table 5. Review of the medical characteristics of the gastric cancer-related death cases

Case	Sex	Age at ESD	Comorbidity status	Complication	Histologic type	Resection	Additional treatment after NCR	Recurrence (Months from ESD)	Metastasis (Months from ESD)	Treatment status	Survival time (months)
1	F	75	Mild - HTN	No	Undiff - diffuse	NCR	SRG	24	24	SRG - CMT	37
2	F	61	WO co-morbidity	No	Diff - intestinal	NCR	FU	60	60	CMT - hospice	60
3	M	70	Moderate to severe - CLD	Fever	Undiff - NA	CR	-	12	No	FU loss after recur	29
4	M	59	Moderate to severe - CLD	Bleeding and fever	Diff - intestinal	CR	-	No	No	FU loss	50
5	M	61	Mild - CHD	Fever	Diff - intestinal	NCR	FU	45	45	CMT	54
6	M	56	Moderate to severe - CLD	No	Diff - intestinal	CR	-	36	36	SRG - refused CMT	46
7	F	77	Mild - HTN	Fever	Diff - intestinal	NCR	SRG	No	No	FU loss	41
8	F	51	Mild - treated CAN	Perforation	Undiff - diffuse	CR	-	12	78	SRG - CMT	85
9	M	79	Mild - CHD, HTN	Delayed bleeding	Diff -intestinal	CR	-	No	No	FU loss	23
10	M	76	Mild - treated CAN	No	Diff - intestinal	CR	-	No	No	FU loss	3

Abbreviations: HTN, hypertension; WO, without; CLD, chronic liver disease; CHD, coronary heart disese; CAN, cancer; NA, not applicable; NCR, non-curative cancer; CR, curative cancer; SRG, surgery; FU, follow-up; CMT, chemotherapy.

국 문 초 록

서론: 동반 질환을 가지고 있는 환자에서의 조기 위암 치료를 위한 내시경 절제술이 증가함에 따라 동반 질환 환자에서 조기 위암 치료를 위한 내시경 점막하 박리술의 효과를 연구할 필요가 있다. 이 연구의 목적은 동반 질환 환자에서 조기 위암에 대한 내시경 점막하 박리술 후의 임상 결과를 분석하는 것이다.

방법: 2010 년부터 2014 년까지 서울대학교병원에서 조기 위암으로 내시경 점막하 박리술을 받은 969 명의 환자 및 1015 개의 병변을 분석 하였다. 단기 및 장기 임상 결과는 동반 질환에 상태에 따라 평가되었다.

결과: 558 명의 환자 (57.6%)에서 동반 질환이 보고되었다. 항응고제를 사용하는 환자는 동반 질환 군에서 더 흔했다 (29.5% 대 0.9%; P<0.0001). 시술 관련 합병증 (출혈 및 천공)은 두 군 간에 유의한 차이가 없었지만 입원 기간은 유의하게 길었고 (1.8 대 1.4 일; P=0.023) 생존율은 동반 질환 군에서 유의하게 짧았다 (5년 전체 생존율 97.3% - 동반질환이 없는 군, 93.8% - 경증 질환 군, 74.7% - 중증 질환 군; P<0.0001, 5년 질병 별 생존율 100%, 98.5%와 95.2%; P=0.016, 5년 무병 생존율 89.2%, 86.4%와 70.7%; P=0.007).

결론: 내시경 점막하 박리술은 동반 질환을 가진 환자에게도 합병증의 위험이 낮게 수행 될 수 있다. 동반 질환이 있는 환자의 장기 생존율이 비교적 낮기 때문에 동반 질환이 있는 환자의 경우 더욱 자세한 추적 조사가 필요하다.

주 요 어 : 내시경 점막하 박리술, 조기 위암, 동반 질환, 임상적 결과

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