Incidence of Dumping Syndrome after Laparoscopic Vagus Nerve-preserving Distal Gastrectomy for Early Gastric Cancer: A Preliminary Study

So Hyun Kang, MD[a], Sang Jun Lee, MD[a], Yongjoon Won, MD[b], Young Suk Park, MD[a,b], Sang-Hoon Ahn, MD[a,b], Yun-Suhk Suh, MD, PhD[a,b], Hyung-Ho Kim, MD, PhD[a,b]

a Department of Surgery, Seoul National University Bundang Hospital, Seongnam, Korea
b Department of Surgery, Seoul National University College of Medicine, Seoul, Korea

서울대학교 SEOUL NATIONAL UNIVERSITY

SNUH 분당서울대학교병원 SEOUL NATIONAL UNIVERSITY BUNDANG HOSPITAL

COI Disclosure

- The authors have no conflict of interest to disclose.

Vagus Nerve-preserving Distal Gastrectomy

- Increase in incidence of early gastric cancer (EGC) and longer survival
  - more focus on quality of life (QOL) and preventing post-gastrectomy syndromes → function preserving gastrectomy
- Vagus nerve
  - Hepatic branch
    - Gallstone formation
  - Celiac branch
    - Gastrointestinal motility (duodenum, jejunum)
    - Visceral fat volume
    - Appetite

Purpose

- This study aims to evaluate the incidence of dumping syndrome after vagus nerve-preserving distal gastrectomy (VPNDG).

Study design

- Prospective observational phase II study
- From August 2017 to June 2018
- Inclusion
  - patients diagnosed with EGC in the distal 2/3rd of the stomach planned for totally laparoscopic distal gastrectomy (TLDG) with Roux-en Y gastrojejunostomy (GJ)
- Exclusion
  - either vagus branch sacrificed, anastomosis other than Roux-en Y GJ, gastrectomy other than TLDG, combined resection of other organs
- Prior informed consent

Outcome

- Primary outcome
  - Incidence of dumping syndrome after 12-months.
  - Dumping syndrome defined as Sigstad score ≥ 7
- Secondary outcomes
  - operative outcome
  - complications
  - QOL questionnaire: EORTC-C30 and STO22

Results – Operative Outcome

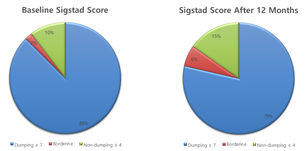
Table 1. Patient demographics and operative data (n = 100)

Age (years)	60.1 ± 10.6
Sex	
Male	60 (60.0%)
Female	40 (40.0%)
Body mass index (kg/m2)	24.5 ± 3.1
Reconstruction type	
Billroth I	16 (16.0%)
Billroth II	3 (3.0%)
Roux-en Y	68 (68.0%)
Uncut Roux-en Y	13 (13.0%)
Tumor size (cm)	2.3 ± 1.3
Proximal margin (cm)	3.5 ± 2.7
Distal margin (cm)	5.5 ± 3.3
Retrieved number of lymph nodes	55.6 ± 19.7
pT stage	
pT1a	66 (66.0%)
pT1b	32 (32.0%)
pT2	2 (2.0%)
pN stage	
pN0	94 (94.0%)
pN1	4 (4.0%)
pN2	2 (2.0%)

Operation time (mins)	167.0 ± 41.3
Estimated blood loss (mL)	26.8 ± 32.9
Hospital stay (postoperative days)	4 (3 - 10)
Time to first flatus (postoperative days)	3 (3 - 5)
Start of semi-fluid diet (postoperative days)	2 (2 - 6)
Complication ≥ Clavien-Dindo grade II	11 (11.0%)
Complication ≥ Clavien-Dindo grade III	2 (2.0%)

Data presented as mean ± standard deviation, median (range), value (percentage).

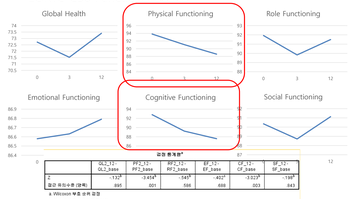
Results – Dumping Syndrome





Results – Quality of Life Questionnaire

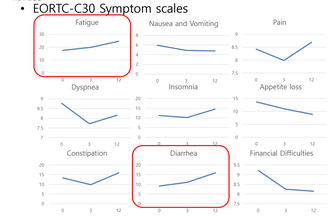
- EORTC-C30 Functional scales



	GQ2_12-GL2_base	PF2_12-PF2_base	RF2_12-RF2_base	EF_12-EF_base	CF_12-CF_base	SF_12-SF_base
t	-1.127	-3.414***	-1.647	-.412	-3.113**	-1.108
점근 유의수준 (양측)	.895	.001	.588	.488	.003	.543

▲ Wilcoxon 부호 순위 검정
도 점수 분포를 그래프로 합니다.
▲ 종속 변수를 그래프로 합니다.

- EORTC-C30 Symptom scales





Risk Factors for Dumping

- Univariate

	OR	lcl	ucl	p-value
Female sex	5.31	1.66	20.53	0.008
Age	0.94	0.89	0.99	0.030
Hospital stay days	0.99	0.76	1.14	0.879
BMI	0.93	0.77	1.11	0.446
ASA score > 1	0.70	0.24	2.02	0.500
Operation time	1.00	0.98	1.01	0.737
Estimated Blood Loss	1.00	0.97	1.01	0.725
Reconstruction type				
Billroth I	0.78	0.11	3.26	0.760
Billroth II	0.00	0.00	-	0.999
Roux-en Y	2.07	0.60	9.62	0.288
Uncut Roux-en Y	0.43	0.02	2.49	0.441
Early Complications	1.30	0.18	5.80	0.755

- Multivariate

	OR	lcl	ucl	p-value
Female sex	4.37	1.31	17.27	0.022
age	0.96	0.90	1.01	0.113

Conclusion

- Laparoscopic vagus nerve-preserving distal gastrectomy is safe in short-term outcomes.



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