

## Supplementary Methods

### Is totally laparoscopic total gastrectomy better than laparoscopy-assisted total gastrectomy for clinical stage I gastric cancer? A propensity-score matched analysis

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### ***Surgical outcome***

To determine the trends of complication data and learning curve, the cumulative sum (CUSUM) score using the CCI and operation time of the TLTG group was calculated. The formula of CUSUM is  $\sum_{i=1}^n (Xi - \mu)$ , where  $X_i$  is the CCI or operation time of each case, and  $\mu$  is the average value of the CCI or operation time in the TLTG group. The time period to overcome the learning curve was determined as follows: Of the cumulative cases with the peak value of CUSUM, if the CCI, overall complication, or operation time shows the greatest reduction after the case compared before, then that case was considered as the time of overcoming the learning curve. The TLTG group after overcoming the learning curve was 2:1 propensity score matched again to control cases of the LATG group [1].

### ***Quality of Life***

We reviewed the independently collected QoL cohort of gastric cancer patients in SNUH, using the EORTC QoL questionnaires (C30, STO22, and OG25). The QoL cohort was approved by the Institutional Review Board of SNUH (H1406-108-590), and was followed preoperatively and at 3 months, 6 months, and 1 year postoperatively. Then, we separately retrieved QoL data of patients matched to our TLTG and LATG groups. The difference in QoL trends over time periods between the TLTG and LATG groups was analyzed by repeated measure analysis of variance (ANOVA), by controlling preoperative QoL score as the covariate. Analysis of covariance (ANCOVA) was used to compare the QoL at certain postoperative time points (3, 6, 12 months) between two groups, by controlling the confounding effect of preoperative QoL score. When the QoL at certain time points (3, 6 or 12 months) were different between two groups, multivariate

backward stepwise linear regression analysis was used to determine the most independent risk factors for the differences of QoL at each month, after excluding all possible confounding factors.

### ***Statistical analysis***

Fisher's exact test was used for categorical variables. Student's t-test and one-way ANOVA were used to compare continuous variables between the two groups or among more than three groups. Wilcoxon rank sum test was used to compare two groups with the CCI as non-parametric data. All tests were two-sided, and  $P$  value of  $<0.05$  was considered statistically significant. Statistical analyses were performed using the IBM SPSS Statistics version 25 (IBM Corp., Armonk, NY).

## References

1. Kim TH, Suh YS, Huh YJ, et al. The comprehensive complication index (CCI) is a more sensitive complication index than the conventional Clavien-Dindo classification in radical gastric cancer surgery. *Gastric Cancer*. 2018;21(1):171-181.