

Editorial



Decision for Safe Discharge After Gastric Cancer Surgery: The Finale of Enhanced Recovery After Surgery Program

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Since the first successful gastrectomy by Theodor Billroth in 1881 [1], surgery has been the main treatment option for gastric cancer, which is one of the main causes of death in the Republic of Korea [2]. Understanding the biology of cancer and anatomy of the stomach and surrounding structures [3], the developed surgical technique and equipment [4], and improved perioperative care [5] help improve the surgical outcomes after gastrectomy for gastric cancer. The related mortality has dramatically decreased from 69% in the 1880s to less than 1% recently [1,6]. The hospital stay has also decreased from 22 days reported in the first cases by Billroth to 7 days in recent cases [6], and the minimally invasive surgery reduced it to even less than 5 days [7]. The enhanced recovery after surgery (ERAS), a multimodal, multidisciplinary approach to surgical treatment, is the center of this improvement.

Since the introduction of “fast-track surgery” for patients who have undergone coronary bypass in 1994 [8], various efforts have been made to enhance the recovery of those who underwent surgery, and they have become systemized and integrated into the ERAS program [9]. Through evidence-based, standardized, and optimized perioperative care programs, including minimal incision, active pain control, balanced fluid intake, carbohydrate drinks taken 2 hours before surgery, early removal of drains, early mobilization, and serving of drinks on the day of the operation, the ERAS program results in the shortening of hospital stays and reduction of surgical complications and readmission rates, consequently improving patients’ wellness and saving medical costs. Because following the ERAS program leads to the discharge of the patient, a decision should be based on clinical evidence. In addition, complications after discharge outside of the hospital could delay early management, consequently causing patients’ emergency room visits or readmission, and those situations could ruin all the efforts of ERAS. Early discharge is necessary for the application of ERAS; however, it should be based on the patient’s safety and absence of risk. Therefore, supporting the decision for “safe discharge” is necessary for clinical practice. In this sense, the recent report by Guner et al. [10] is very timely.

They evaluated a prospective complication database from a single center in Korea to identify safe discharge criteria based on simple and routinely used clinical parameters on postoperative day 3. For a study cohort, 1,438 patients who received gastrectomy for gastric

cancer by a single surgeon were enrolled. A total of 142 (9.9%) patients experienced grade II or higher postoperative complications and were not suitable for safe discharge. Through the risk analysis using logistic regression, 4 parameters, including body temperature ($>38^{\circ}\text{C}$), pulse ($>90/\text{minutes}$), C-reactive protein level ($>110\text{ mg/L}$), and neutrophil count ($>6,700/\mu\text{L}$) were identified as the main risks of complications that occur on postoperative day 3. The presence of any of these risks showed high negative predictive values (NPVs, 95.9%) and good sensitivity (80.3%) compared with that observed with other combinations (Table 3 and Supplementary Table 1). These criteria for safe discharge were validated in an independent cohort ($n=512$), including patients who underwent surgery by other surgeons in the same hospital, and the performance was acceptable (93.7% of NPV).

These results were from a high-volume gastric cancer specialized center in Korea; therefore, the safe discharge criteria suggested by Guner et al. [10] should be validated in other centers before being generalized. In addition, the subgroup analyses of the validation cohort showed that the NPV of the criteria was lower than that of the rate of non-complications (90.2%) for patients with American Society of Anesthesiology III (89.5%), open surgery (86.0%), and stage II/III (88.3%). Therefore, it implies that these criteria may not be accurate for these subgroups. However, the 4 parameters are simple, easily gatherable in the clinic, and it is intuitive to understand their positive association with any complications. Therefore, it could enhance the ERAS program for gastric cancer surgery and be the final step of the ERAS program.

These criteria that are based on the 4 parameters observed on postoperative day 3 will be helpful to the clinicians in deciding the safe discharge of patients after gastrectomy for gastric cancer. However, it does not mean that the patient should be discharged 3 days after surgery. Satisfying the safe discharge criteria cannot justify the very-early discharge of patients (<5 days after surgery), especially if patients feel discomfort, anxiety, and are not in a good condition [11]. As the authors described, “the prerequisite conditions for safe discharge are being able to tolerate diet, generally in good condition, and having adequate pain control.” Considering the low cost of hospital stay (<100 US dollars) in Korea, very-early discharge may not achieve the cost-benefit. All the efforts of our clinicians, including the application of the ERAS program, is for the wellness of the patient and we should remain aware of the same while applying the program.

REFERENCES

1. Maruyama K. History of gastric cancer surgery. In: Noh S, Hyung W, eds. *Surgery for Gastric Cancer*. Berlin: Springer, 2019.
2. Park SH, Kang MJ, Yun EH, Jung KW. Epidemiology of gastric cancer in Korea: trends in incidence and survival based on Korea Central Cancer Registry data (1999-2019). *J Gastric Cancer* 2022;22:160-168.
[PUBMED](#) | [CROSSREF](#)
3. Jeong O, Jung MR, Kang JH. Prognostic value of the anatomic region of metastatic lymph nodes in the current TNM staging of gastric cancer. *J Gastric Cancer* 2021;21:236-245.
[PUBMED](#) | [CROSSREF](#)
4. Lee HH, Jeong O, Seo HS, Choi MG, Ryu SY, Sohn TS, et al. Long-term oncological outcomes of reduced three-port laparoscopic gastrectomy for early-stage gastric carcinoma: a retrospective large-scale multi-institutional study. *J Gastric Cancer* 2021;21:93-102.
[PUBMED](#) | [CROSSREF](#)
5. Ri M, Nunobe S, Ida S, Ishizuka N, Atsumi S, Hayami M, et al. Postprandial asymptomatic glycemic fluctuations after gastrectomy for gastric cancer using continuous glucose monitoring device. *J Gastric Cancer* 2021;21:325-334.
[PUBMED](#) | [CROSSREF](#)

6. Information Committee of the Korean Gastric Cancer Association. Korean Gastric Cancer Association-led nationwide survey on surgically treated gastric cancers in 2019. *J Gastric Cancer* 2021;21:221-235.
[PUBMED](#) | [CROSSREF](#)
7. Roh CK, Choi S, Seo WJ, Cho M, Choi YY, Son T, et al. Comparison of surgical outcomes between integrated robotic and conventional laparoscopic surgery for distal gastrectomy: a propensity score matching analysis. *Sci Rep* 2020;10:485.
[PUBMED](#) | [CROSSREF](#)
8. Engelman RM, Rousou JA, Flack JE 3rd, Deaton DW, Humphrey CB, Ellison LH, et al. Fast-track recovery of the coronary bypass patient. *Ann Thorac Surg* 1994;58:1742-1746.
[PUBMED](#) | [CROSSREF](#)
9. Ljungqvist O, Scott M, Fearon KC. Enhanced recovery after surgery: a review. *JAMA Surg* 2017;152:292-298.
[PUBMED](#) | [CROSSREF](#)
10. Guner A, Kim KY, Park SH, Cho M, Kim YM, Hyung WJ, et al. Safe discharge criteria after curative gastrectomy for gastric cancer. *J Gastric Cancer* 2022;22:395-407.
[CROSSREF](#)
11. Goodacre S. Safe discharge: an irrational, unhelpful and unachievable concept. *Emerg Med J* 2006;23:753-755.
[PUBMED](#) | [CROSSREF](#)