

Comments to young surgeons concerning laparoscopic spleen-preserving D2 lymph node dissection for advanced gastric cancer on the upper body

Yoon Young Choi*, Ji Yeong An*, Woo Jin Hyung, Sung Hoon Noh

Department of Surgery, Yonsei University Health System, Yonsei University College of Medicine, Seoul, Korea

*These authors contributed equally to this work.

Correspondence to: Sung Hoon Noh, MD. Department of Surgery, Yonsei University College of Medicine, 50 Yonsei-Ro, Seodaemun-gu, 120-752, Seoul, Korea. Email: sunghoonn@yuhs.ac.

Abstract: Qualified radical gastrectomy with lymph node dissection is very important to the prognosis of patients with gastric cancer. Now D2 lymph node dissection is standard procedure for gastric cancer surgery, and spleen hilar lymph node dissection is mandatory for gastric cancer in upper body. Because the anatomy of vessels in this area is very complicated, D2 lymph node dissection is technical challenging not only for open gastrectomy but also for laparoscopic one. Adapting a new technique is important to all surgeons, but we surgeons should always consider a patient's safety as the most important factor during surgery and that efforts should be based on scientific rationale with oncologic principles. I hope that the recent report by Huang et al. about laparoscopic spleen preserving hilar lymph node dissection would be helpful to young surgeons who will perform laparoscopic total gastrectomy for gastric cancer.

Keywords: Gastric cancer; lymph node dissection; laparoscopy; spleen

Submitted Jun 12, 2014. Accepted for publication Jun 13, 2014.

doi: 10.3978/j.issn.1000-9604.2014.06.15

View this article at: <http://dx.doi.org/10.3978/j.issn.1000-9604.2014.06.15>

Introduction

Although the incidence and mortality of gastric cancer have decreased, gastric cancer remains an important health problem worldwide and is the most important malignancy in East Asia, including China, Japan, and Korea. According to GLOBOCAN 2012, 952,000 patients were newly diagnosed with gastric cancer (6.8% of total cancer and the fifth most common malignancy), and 723,000 died because of it (8.8% of the total cause of cancer death and the third most common cause) (1).

Although recent studies have established the role of chemotherapy and radiation therapy in gastric cancer (2-7), the most important strategy against gastric cancer remains surgery (8). Because surgery provides the only chance of a cure in patients with gastric cancer, qualified radical gastrectomy with lymph node dissection is very important for a better outcome. Through long debates regarding the optimal extent of lymph node dissection in gastric cancer

surgery, D2 lymph node dissection is now recommended as standard treatment under the Japanese guidelines (9), the National Comprehensive Cancer Network (NCCN), and the European Society for Medical Oncology (ESMO) guidelines when it can be performed safely (10,11). D2 lymph node dissection in total gastrectomy for upper body gastric cancer includes spleen hilar lymph node dissection [#11d and #10 according to the Japanese guidelines (9)], and dissecting these areas appropriately and safely is one of the technical challenges even in open surgery for gastric cancer because the anatomy of the vessels in these areas is very complicated.

Several decades ago, distal pancreatectomy and splenectomy were usually performed to dissect lymph nodes around #11d and #10 areas, sometimes leading to more complications such as pancreatic leak and subphrenic abscess (12). In 1970s', Maruyama *et al.* (13) performed and reported pancreas-preserving total gastrectomy for gastric

cancer with reasonable morbidity and mortality. Noh *et al.* presented the technical possibility of spleen-preserving total gastrectomy with complete dissection of splenic hilar lymph nodes using an electrocautery device (Bovie) for the first time at the second International Gastric Cancer Congress (IGCC) which was held at 1997 in München, Germany. Additionally, several trials have reported the advantages of spleen-preserving and pancreas-preserving total gastrectomy; subgroup analysis of a randomized controlled trial showed the highest morbidity and worst prognosis of pancreatico-splenectomy compared with spleen and pancreas-preserving total gastrectomy (14), spleen-preserving gastrectomy showed better short-term outcomes than and similar long-term outcomes to splenectomy when #11d and #10 are dissected adequately (15,16). Although some surgeons still believe that appropriate lymph node dissection of #11d and #10 are impossible without splenectomy, well-trained and experienced surgeons most likely can perform it safely with low morbidity and mortality (16). Presently, pancreatectomy or splenectomy for lymph node dissection is not a standard procedure for upper body gastric cancer (10), but appropriate D2 lymph node dissection, including that of #11d and #10, remains important in gastric cancer surgery.

Because laparoscopic surgery has several short-term advantages over open gastrectomy for gastric cancer, such as less pain, a shorter hospital stay, and cosmetic benefits (17), it has been widely applied in early gastric cancer without evidence of lymph node metastasis, particularly in Korea and Japan. Technically, performing complete D2 lymph node dissection with laparoscopic devices was questionable; thus, it had been carefully applied to gastric cancer surgery only for early gastric cancer in which less than D2 lymph node dissection is allowed during the initial period of laparoscopic gastrectomy. Presently, owing to the development of laparoscopic devices, advanced knowledge of laparoscopic view, and accumulated technical experiences, many surgeons attempt to perform D2 lymph node dissection in laparoscopic gastrectomy. Consequently, experienced gastric cancer surgeons have tried to expand its indication into locally advanced gastric cancer, however, its oncologic safety remains controversial: it is difficult to maintain the oncologic principles of cancer surgery such as using the no-touch technique, not manipulating the cancer itself, and minimizing blood loss and the operative time with proper radical lymph node dissection in advanced gastric cancer. Although the recent multicenter, large-scale retrospective study from Korea showed that the long-term

oncologic outcome of laparoscopic gastrectomy for gastric cancer was comparable to that of open gastrectomy (18), there is no strong evidence to date from a randomized controlled trial to confirm the latter finding. Before the start of the KLASS II trial, an ongoing, multicenter, randomized controlled trial comparing the outcomes of laparoscopic and open gastrectomy in advanced gastric cancer, many surgeons could not join the trial because of the inadequate quality of D2 lymph node dissection in their video clip for laparoscopic gastrectomy. This fact seems to suggest the difficulty of adequate D2 lymph node dissection in laparoscopic surgery. Additionally, D2 lymph node dissection in laparoscopic total gastrectomy is more complicated than that in laparoscopic distal gastrectomy because D2 lymph node dissection in total gastrectomy includes the #11d and #10 areas where adequate lymph node dissection is challenging, even in open surgery, and anastomosis is more difficult. Thus, laparoscopic total gastrectomy with D2 lymph node dissection is technically challenging, and only experienced laparoscopic gastric cancer surgeons should perform it safely.

Developing a surgical technique is an important mission for surgeons, and these efforts should be continued. Additionally, sharing knowledge and educating and training young surgeons are very important duties for experienced and senior surgeons. Thus, the recent report by Huang *et al.* (19) is very timely: their stepwise explanation with video can guide other surgeons, particularly young ones, regarding how splenic hilar lymph node dissection with laparoscopic devices can be performed for upper-body gastric cancer. Although their method may be used generally during laparoscopic total gastrectomy with hilar lymph node dissection, they summarized the procedure in an easily comprehensible form. We would like to add the following comments to their procedure. As the authors mentioned, changing the position, left side up with the reverse Trendelenburg position, could be helpful to dissect #11d and #10 because the operative field is improved. Adding the information the exact location of each trocar and its size would be helpful to readers. Additionally, when using an energy device around vessels, the acting blade should not contact the vessels directly, and the activation time should be decreased because pseudo-aneurysm can occur, leading to disastrous consequences for patients (20).

Adapting and developing a new technique are important to all surgeons worldwide. However, these efforts should be based on scientific rationale with oncologic principles. Sometimes, minimally invasive surgery is considered only

minimally invasive to outline skin incisions, however, the quality of surgery may be poor with a very long operative time, much bleeding, and inadequate lymph node dissection. Surgeons should not be a technician, should be a philosopher. Surgeons should always consider a patient's safety as the most important factor during surgery, and the pursuit of innovation should be based on honoring oncologic principles.

Acknowledgements

Disclosure: The authors declare no conflict of interest.

References

1. Available online: http://globocan.iarc.fr/Pages/fact_sheets_cancer.aspx
2. Bang YJ, Kim YW, Yang HK, et al. Adjuvant capecitabine and oxaliplatin for gastric cancer after D2 gastrectomy (CLASSIC): a phase 3 open-label, randomised controlled trial. *Lancet* 2012;379:315-21.
3. Macdonald JS, Smalley SR, Benedetti J, et al. Chemoradiotherapy after surgery compared with surgery alone for adenocarcinoma of the stomach or gastroesophageal junction. *N Engl J Med* 2001;345:725-30.
4. Smalley SR, Benedetti JK, Haller DG, et al. Updated analysis of SWOG-directed intergroup study 0116: a phase III trial of adjuvant radiochemotherapy versus observation after curative gastric cancer resection. *J Clin Oncol* 2012;30:2327-33.
5. Paoletti X, Oba K, Burzykowski T, et al. Benefit of adjuvant chemotherapy for resectable gastric cancer: a meta-analysis. *JAMA* 2010;303:1729-37.
6. Sakuramoto S, Sasako M, Yamaguchi T, et al. Adjuvant chemotherapy for gastric cancer with S-1, an oral fluoropyrimidine. *N Engl J Med* 2007;357:1810-20.
7. Lee J, Lim do H, Kim S, et al. Phase III trial comparing capecitabine plus cisplatin versus capecitabine plus cisplatin with concurrent capecitabine radiotherapy in completely resected gastric cancer with D2 lymph node dissection: the ARTIST trial. *J Clin Oncol* 2012;30:268-73.
8. Nakajima T. Gastric cancer treatment guidelines in Japan. *Gastric Cancer* 2002;5:1-5.
9. Japanese Gastric Cancer Association. Japanese gastric cancer treatment guidelines 2010 (ver. 3). *Gastric Cancer* 2011;14:113-23.
10. Ajani JA, Bentrem DJ, Besh S, et al. Gastric cancer, version 2.2013: featured updates to the NCCN Guidelines. *J Natl Compr Canc Netw* 2013;11:531-46.
11. Okines A, Verheij M, Allum W, et al. Gastric cancer: ESMO Clinical Practice Guidelines for diagnosis, treatment and follow-up. *Ann Oncol* 2010;21 Suppl 5:v50-4.
12. Ohashi I, Takagi K, Ota H, et al. Pancreatosplenectomy for advanced gastric carcinoma, with special reference to lymph node metastasis. *Jpn J Gastroenterol Surg* 1979;12:993.
13. Maruyama K, Sasako M, Kinoshita T, et al. Pancreas-preserving total gastrectomy for proximal gastric cancer. *World J Surg* 1995;19:532-6.
14. Cuschieri A, Fayers P, Fielding J, et al. Postoperative morbidity and mortality after D1 and D2 resections for gastric cancer: preliminary results of the MRC randomised controlled surgical trial. The Surgical Cooperative Group. *Lancet* 1996;347:995-9.
15. Lee KY, Noh SH, Hyung WJ, et al. Impact of splenectomy for lymph node dissection on long-term surgical outcome in gastric cancer. *Ann Surg Oncol* 2001;8:402-6.
16. Oh SJ, Hyung WJ, Li C, et al. The effect of spleen-preserving lymphadenectomy on surgical outcomes of locally advanced proximal gastric cancer. *J Surg Oncol* 2009;99:275-80.
17. Kim HH, Hyung WJ, Cho GS, et al. Morbidity and mortality of laparoscopic gastrectomy versus open gastrectomy for gastric cancer: an interim report--a phase III multicenter, prospective, randomized Trial (KLASS Trial). *Ann Surg* 2010;251:417-20.
18. Kim HH, Han SU, Kim MC, et al. Long-term results of laparoscopic gastrectomy for gastric cancer: a large-scale case-control and case-matched Korean multicenter study. *J Clin Oncol* 2014;32:627-33.
19. Huang CM, Chen QY, Lin JX, et al. Huang's three-step maneuver for laparoscopic spleen-preserving No. 10 lymph node dissection for advanced proximal gastric cancer. *Chin J Cancer Res* 2014;26:208-210.
20. Kim DY, Joo JK, Ryu SY, et al. Pseudoaneurysm of gastroduodenal artery following radical gastrectomy for gastric carcinoma patients. *World J Gastroenterol* 2003;9:2878-9.

Cite this article as: Choi YY, An JY, Hyung WJ, Noh SH. Comments to young surgeons concerning laparoscopic spleen-preserving D2 lymph node dissection for advanced gastric cancer on the upper body. *Chin J Cancer Res* 2014;26(3):231-233. doi: 10.3978/j.issn.1000-9604.2014.06.15