

INVITED COMMENTARY / КОМЕНТАР ПО ПОЗИВУ

Laparoscopic radical gastrectomy for advanced gastric neoplasms: *Quo vadis?*

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Reading the article by Bjelović et al. [1], with their short-term results of laparoscopic radical gastrectomy for advanced gastric neoplasms, took my memories 30 years back. Then, as a young surgeon, trying to improve my knowledge and skills in treatment of gastric cancer (GC), I was a guest of Prof. Zoran Gerzić, at the First Surgical Clinic in Belgrade. I knew that Prof. Gerzić had accepted total gastrectomy, omentectomy and systematic D2 lymphadenectomy as standard procedure in 1985 [2].

Since then, surgery has remained the only curative treatment, either for early or advanced nonmetastatic GC. The concept of adequacy of surgical resection has changed over the years. Intention to obtain better survival led the surgeons to more radical surgery and lymphadenectomy, but high complication and mortality rate without influencing long-term survival, especially in the Western countries, brought us back. At present, a definitive agreement has been reached about the resection and lymphadenectomy extension in relation to the position of the tumor and its pattern. After numerous randomized controlled trials and cohort studies, state-of-the-art curative-intent surgery for GC in Europe these days is gastrectomy with a R0 resection associated with a D2 lymphadenectomy and omentectomy [3]. Now it is clear how farsighted Prof. Gerzić was back in 1985.

New technology improvements with minimally invasive surgical techniques gave us the possibility to additionally reduce complications and mortality rates. Pioneer laparoscopic surgeons tried to perform laparoscopic gastrectomy (LG) exactly as open gastrectomy (OG), without any idea on how to perform the surgery in an oncologically improved manner. The main advantage of LG over OG is the small access that incurs less damage to the abdominal wall and hence less pain and faster recovery, which is especially appreciated in patients with extremely poor respiratory function. But there are some constraints of LG compared to OG.

Endoscopic views are inferior to human vision because of two-dimensional imaging, the narrow field of endoscopic view and the dissociation between the sensory (visual) and motor (hand) fields. Mechanical constraints in LG include a limited number of degrees of freedom of endoscopic instruments compared to human hand, diminished indirect tactile feedback through long endoscopic instruments, and the fulcrum effect through abdominal wall. The limited intra-abdominal space during LG makes the handling of large gastric tumors by long thin instruments very difficult and occasionally traumatic; it is sometimes unavoidable to pinch, or stick, or at least touch primary tumors by metal graspers, which may cause cancer cell spillage and increase potential risk of peritoneal metastasis. Due to limited access of straight instruments and relative difficulty of suturing, reconstruction methods are often compromised, especially in laparoscopic total gastrectomy (LTG), with potential worsening of long-term results. Although technological innovations, like 3D imaging in laparoscopy and robotic surgery, try to overcome the above constraints, performing LG is still inherently more difficult than OG.

Since the first LG for GC was performed by Japanese surgeons in 1991, laparoscopic distal gastrectomy for early GC has gained wide acceptance for its minimal invasion compared to open distal gastrectomy. In the 2014 version of the guidelines by the Japan Society for Endoscopic Surgery, laparoscopic distal gastrectomy was recommended for cStage I cancer (rated recommendation B) [4]. These decisions reflect the fact that the safety of the laparoscopic approach was proven in a prospective phase II study (JCOG0703) that involved only certified surgeons with sufficient experience and that superiority in terms of short-term outcome has been reported through small-scale randomized trials and meta-analyses. Data regarding the long-term outcome are yet to be available,

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and results of pivotal phase III studies conducted in Japan (JCOG0912) and Korea (KLASS01) are awaited for.

To date there has been no evidence to widely recommend the laparoscopic approach for more advanced GC, since randomized trials concerning safety and long-term outcome are currently ongoing (JLSSG0901, KLASS02). However, there has been some good news published recently in a meta-analysis by Wang et al. [5], including 17 studies encompassing a total of 2,313 patients (955 underwent LTG and 1,358 underwent open total gastrectomy [5]. LTG had the benefits of less blood loss, less postoperative pain, quicker bowel function recovery, shorter hospital stay, and reduced postoperative morbidity, at the price of longer operative time. There were no statistical differences in the number of harvested lymph nodes, resection margins, hospital mortality, and long-term outcomes, which indicates similar oncological safety.

A famous Japanese surgeon Sasako [6] said, "Primary surgery for gastric cancer is once in a life occasion for each patient. It's not a computer game in which we can easily

reset for next challenge. ... Before starting surgery, I always pray God, 'Assist me to recognize the nature and spread of the cancer and conform the procedure accordingly and achieve best cure for the patient,' since it's the only one chance for him or her."

In GC surgery, the quality of the first operation decides the patient's fate, whether they will be cured or not. As surgical perfection cannot be compensated by radiotherapy or chemotherapy in GC, surgeons should perform sufficient surgery, safely and with the maximum probability of cure. Now it seems that it is possible to reach the same good result with both techniques, but only when certified surgeons with excellent knowledge and a great deal of experience are involved. However, surgeons will have to be aware that the learning curve issue exists in laparoscopic surgery, and the indication for this approach should be decided at discretion of each institution based on the expertise of the staff members who participate in this type of surgery. The priority for surgery for advanced GC should remain the long-term cure; otherwise, laparoscopic surgeons can take laparoscopic surgery in the wrong direction.

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