

Laparoscopic D2 dissection for locally advanced gastric cancer in China

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Minimally invasive surgery has become one of the most important concepts during the development of surgery in the 21st century, among which the laparoscopic technique represents a major advancement in this field. Since Kitano *et al.* first performed laparoscopy-assisted distal gastrectomy for early gastric cancer in 1991 (1), the laparoscopic surgeries for gastric cancer have rapidly developed in the past two decades and became widely applied worldwide. Some published clinical trials have confirmed that, in addition to minimal invasiveness, the laparoscopic surgeries are also equally effective in treating early or locally advanced tumors as the open procedures (2-4). These studies were mainly conducted in patients with early gastric cancer, and therefore the laparoscopy-assisted surgery has been regarded as one of the standard approaches for gastric cancer. However, its role in the management of locally advanced gastric cancer is still to be further elucidated from the results of some large-scale randomized controlled trials (RCTs) including JCOG0912, KLASS-02, and CLASS-01.

The number of gastric cancer patients in China accounts for about 40% of the global total cases, and over 80% of them are already in the advanced stages, showing a fairly large gap when compared with those (over 50% are in the early stages) in Japan and Korea (5). As a result, alternative of treatment strategy is also directly affected. Therefore, the challenges faced by laparoscopic surgeries for gastric cancer are somehow different from those in other countries. When medical centers in Japan and Korea had already carried out RCTs on the role of laparoscopic surgeries for early gastric cancer, few Chinese hospital adopted this technique (6). Today, some RCTs on the effectiveness of laparoscopic

surgeries for locally advanced gastric cancer are being carried out in Japan and Korea; fortunately, the laparoscopic gastric surgeries have increasingly been applied in China (*Video 1*). More than one Chinese centers have performed over 1,000 laparoscopic gastric operations. Pioneers in this field have demonstrated the features and advantages of laparoscopic surgeries, inspiring the surgeons, particularly the young doctors, to actively learn and apply this technique. Nevertheless, enthusiasm and confidence cannot be easily converted into the adoption and popularization of the new technique. Laparoscopy technology is featured by enlarged field of view and refined dissection, which are particularly important for the radical surgery of gastric cancer and may also exert certain advantages in the training and learning. However, the indications of laparoscopic surgeries for the locally advanced gastric cancer remain controversial. Findings from large-scale RCTs may provide more convincing evidences. In some clinical conditions such as obesity, fusion of lymph nodes, and pre-operative chemotherapy that may make the open surgeries more challenging, will the laparoscopic surgeries be more feasible or more advantageous? Many similar questions are among the hottest research topics in this field in the past few years (7-9). All the beginners must receive intensive training and exercises before they are involved in the clinical practices. The learning curve should be started by managing patients with early gastric cancer.

Although the Chinese doctors were the “learners” during the introduction of laparoscopic surgeries for the early gastric cancer, nowadays some RCTs in patients with locally advanced gastric cancer have also been carried

out in China. Notably, the CLASS-01 is the first multi-center, large-scale, prospective clinical study in this filed in China. Since patients with locally advanced gastric cancer in China is still the main body of sick people, this study will for sure improve the health care quality and maintain the best interests of these patients. However, the surgeries for locally advanced gastric cancer are often more difficult than those for the early ones, and some issues (e.g., the appropriate method for dissecting the splenic hilar lymph nodes in patients with proximal gastric cancer) still have not been addressed. Therefore, currently the laparoscopic surgeries for locally advanced gastric cancer should only be performed in the context of clinical trials. The clinical application of laparoscopic surgeries should advance gradually in due order, with the patients' interests being the top priority. By carrying out active exchanges with domestic and global partners, we will gradually establish and optimize the learning, training and certification of laparoscopic surgeries for gastric cancer in China, enabling the robust and sound application of this technique.

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