



Commentary

The power of meta-analysis and total laparoscopic surgeries



ARTICLE INFO

Keywords:

Meta-analysis

Total laparoscopic surgery

Laparoscopy-assisted surgery

We are in the era of total laparoscopic and especially robotic surgeries. While total laparoscopic surgery has been considered as the gold-standard for many years for some surgeries, such as cholecystectomy and fundoplication, there is still a debate on the role of laparoscopic/robotic surgeries in more complex surgeries, such as total laparoscopic hepatectomy, total or hand-assisted laparoscopic nephrectomy especially for organ transplantation, and total laparoscopic total gastrectomy (TLTG). In the future, we expect to see more complex surgeries performed by total laparoscopic or robotic approaches.

In the current issue of International Journal of Surgery, Zhao et al. [1] reviewed the role of TLTG versus laparoscopic-assisted total gastrectomy (LATG) for gastric cancer in a detailed meta-analysis in order to show the safety and therapeutic effect of the former. TLTG is fairly new technique compared to LATG for gastric cancer [2]. In fact, recent reviews [2,3] highlighted that although TLTG is being performed for advanced gastric cancer, many of these studies are performed in Asian countries and Western countries have limited experience [3].

Zhao et al. evaluated many variables, such as duration of surgery, blood loss, anastomosis time, retrieved lymphatic nodes, proximal and distal resection edges, incision length, time to first fluid and soft diet, time to first flatus, postsurgical and anastomotic complications [1]. The power of meta-analysis and quality of selected studies were adequate

since the authors used the Newcastle-Ottawa Scale (NOS) for the quality assessment. A total of 10 studies with NOS between 6 and 9, all from Asian countries, included 1003 patients in the TLTG group and 921 patients in LATG group. Zhao et al.'s study showed that TLTG enables similar outcomes as LATG for (i) duration of surgery, (ii) anastomosis time, (iii) proximal and distal resection edges, (iv) time to first flatus, (v) time to first soft diet, and (vi) overall post-surgical complications. Moreover, the study reported that TLTG has superior outcomes by (i) reduced intraoperative blood loss, (ii) greater number of retrieved lymph nodes, (iii) reduced duration of hospitalization, and as expected (iv) smaller surgical incision length [1].

In general, meta-analyses are statistically powerful studies which compare multiple scientific studies in order to answer whether one approach is better or as comparable as the other approach [4]. However, they might also have several limitations [5]. Although the meta-analysis by Zhao et al. showed powerful findings for TLTG compared to LATG, several limitations were also highlighted (Table 1).

We believe that the use of TLTG for advanced gastric cancer will be further expanded beyond Asian countries with the help of publications, such as Zhao et al.'s [1], demonstrating benefits and limitations of the procedure. The gold-standard, large-scale randomized-controlled trials, for TLTG are yet to be performed.

Table 1

Power and limitations of the meta-analysis by Zhao et al.

Power	Limitations
10 high quality papers were included based on NOS	All studies were from Asian countries
Each study group included more than 900 patients	All studies were retrospective
> 15 variables were studied to compare both groups	Only short-term outcomes were reported
All 10 studies were between 2014 and 2017	Different surgical teams and medical institutions
Statistically, there was no publication bias	No information regarding patient survival, tumor recurrence, metastasis, adjuvant chemo- or radiotherapies

Legend: NOS = Newcastle-Ottawa Scale for quality assessment.

DOI of original article: <https://doi.org/10.1016/j.ijso.2019.05.020>

<https://doi.org/10.1016/j.ijso.2019.07.005>

Available online 13 July 2019

1743-9191/ © 2019 IJS Publishing Group Ltd. Published by Elsevier Ltd. All rights reserved.

References

- [1] S. Zhao, K. Zheng, J.C. Zheng, et al., Comparison of totally laparoscopic total gastrectomy and laparoscopic-assisted total gastrectomy: a systemic review and meta-analysis, *Int. J. Surg.* 68 (2019) 1–10 <https://doi.org/10.1016/j.ijso.2019.05.020>.
- [2] Y. Kawaguchi, K. Shiraishi, H. Akaike, D. Ichikawa, Current status of laparoscopic total gastrectomy, *Ann. Gastroenterol. Surg.* 3 (2018) 14–23.
- [3] G.D. Lianos, N. Hasemaki, G.K. Glantzounis, M. Mitsis, S. Rauseri, Assessing safety and feasibility of 'pure' laparoscopic total gastrectomy for advanced gastric cancer in the West, *Int. J. Surg.* 53 (2018) 275–278.
- [4] H.E. Jin, M.S. Kim, C.M. Lee, et al., Meta-analysis and systematic review on laparoscopic-assisted distal gastrectomy (LADG) and totally laparoscopic distal gastrectomy (TLDG) for gastric cancer: preliminary study for a multicenter prospective KLASS07 trial, *Eur. J. Surg. Oncol.* (2019), <https://doi.org/10.1016/j.ejso.2019.06.030> Jun 22. pii: S0748-7983(19)30524-4. ([Epub ahead of print]).
- [5] K. Beyer, A.K. Baukloh, C. Kamphues, et al., Laparoscopic versus open gastrectomy for locally advanced gastric cancer: a systematic review and meta-analysis of randomized controlled studies, *World J. Surg. Oncol.* 17 (2019) 68, <https://doi.org/10.1186/s12957-019-1600-1>.

Burcin Ekser*

Department of Surgery, Indiana University School of Medicine, Indianapolis, IN, USA

E-mail address: bekser@iupui.edu.

Chandrashekhara A. Kubal

Department of Surgery, Indiana University School of Medicine, Indianapolis, IN, USA

* Corresponding author.