Editorial

Selective lateral pelvic lymph node dissection through a robotic approach for rectal cancer treated with preoperative chemoradiotherapy: a long way for generalization

Takashi Akiyoshi

Department of Gastroenterological Surgery, Cancer Institute Hospital, Japanese Foundation for Cancer Research, Tokyo, Japan

Correspondence to: Dr. Takashi Akiyoshi. Department of Gastroenterological Surgery, Cancer Institute Hospital, Japanese Foundation for Cancer Research, 3-8-31 Ariake, Koto-ku, Tokyo, Japan. Email: takashi.akiyoshi@jfcr.or.jp.

Comment on: Kim HJ, Choi GS, Park JS, *et al.* Selective lateral pelvic lymph node dissection: a comparative study of the robotic versus laparoscopic approach. Surg Endosc 2017. [Epub ahead of print].

Received: 16 January 2018; Accepted: 28 January 2018; Published: 06 February 2018.

doi: 10.21037/ales.2018.01.07

View this article at: http://dx.doi.org/10.21037/ales.2018.01.07

Lateral pelvic lymph node dissection (LPND) in addition to total mesorectal excision (TME) without radiotherapy has been considered a standard of treatment in Japan, even though LPN metastasis is not suspected on preoperative radiologic examination (1,2). This is so called "prophylactic" LPND, and basically prophylactic LPND is performed bilaterally. Recently, the long-term results of a randomized controlled trial (JCOG0212) to confirm whether TME alone is not inferior to TME plus prophylactic LPND in clinical stage II/III low rectal cancer have been published (3). In the JCOG0212 trial, only patients without LPN enlargement with a short-axis diameter of <10 mm were included, and all patients did not undergo preoperative chemoradiotherapy (CRT). Despite an almost similar 5-year relapse-free survival between TME alone and TME with LPND groups (73.4% *vs.* 73.3%), the non-inferiority of TME alone could not be demonstrated, because the upper limit of the confidence interval (1.36) was above the non-inferiority margin of 1.34. Considering the higher percentage of local recurrence in the TME alone group than in the TME with LPND group (7.4% *vs.* 12.6%, P=0.024), the JCOG group concluded that changing the TME with prophylactic LPND is insufficient as the standard of treatment in Japan.

The JCOG 0212 trial has highlighted the importance of LPN metastasis as the source of local recurrences when it is treated by TME alone. However, the results of the JCOG 0212 trial have little impact on countries other than Japan, where preoperative CRT is the standard of care for advanced low rectal cancer. The local recurrence rate in TME with prophylactic LPND without radiotherapy in JCOG0212 was not superior to that reported in TME alone with preoperative CRT from western countries (4,5), and therefore, it is unlikely that prophylactic LPND will be recognized as a necessary procedure in patients with rectal cancer treated with preoperative CRT.

Then, is there no role of LPND in the treatment of advanced rectal cancer? Recent evidence has shown that LPN metastasis can be a source of local recurrence even after preoperative CRT. Kim *et al.* analyzed 900 patients with rectal cancer treated with preoperative or postoperative CRT without LPND, and showed that LPN short-axis diameter on pre-treatment imaging was significantly associated with LPN recurrence-free survival, and the 5-year LPN recurrence-free survival in patients with a LPN short-axis diameter of <5, 5–<10, and ≥10 mm was 98.2%, 91.7%, and 40.1%, respectively (6). An extremely high rate of LPN recurrence in patients with a LPN short-axis diameter of ≥10 mm strongly suggests that preoperative CRT alone is insufficient in these patients. Kusters *et al.* also reported that the 4-year lateral local recurrence was significantly higher in patients with a LPN short-axis diameter of >10 mm than in patients with LPNs of ≤10 mm (33.3% *vs.* 10.1%, P=0.03) (7). Therefore, it seems reasonable to add LPND selectively in patients with suspected LPN metastasis, even after CRT.

Some papers from western countries have insisted that LPN metastasis is a systemic disease, and there is no benefit

to adding LPND after CRT (8,9). However, LPND was not performed in these studies and LPN metastasis was diagnosed only clinically by radiologic examination. Most papers reporting the outcomes of TME with selective LPND after CRT have been published in Asian countries (10-14). Our group previously reported that 66% of the patients who were treated by CRT and selective LPND had pathological LPN metastasis; importantly, there was only one local recurrence in patients with pathological LPN metastasis, and relapse-free survival was not significantly different from that in patients without LPN metastasis (10). Ishihara *et al.* also reported that 52% of the patients treated by CRT and selective LPND had pathological LPN metastasis, and there were no local recurrences in patients with pathological LPN metastasis (11). Taken together with worse local recurrence rate in patients with suspected LPN metastasis treated by CRT and TME alone (6,7), these data suggest that LPND has an oncological benefit when CRT could not eradicate LPN metastasis.

However, there are some hurdles in adopting LPND worldwide. First, LPND is a complex procedure resulting in more operating time, more blood loss, and more postoperative complications (15,16). Especially for surgeons without experience in LPND, it might not be easy to perform LPND safely before the learning curve reaches a plateau; nevertheless, the candidate of patients needing LPND is limited because of selective use of LPND after CRT. Potentially worse short- and long-term outcomes after LPND performed by surgeons who may still be in their learning phase might mitigate the benefit of adding LPND. Second, western patients are more obese compared with Asian patients, and LPND would be more difficult in such obese patients.

In this setting, Kim *et al.* (17) needs to be commended for conducting the first comparative study between laparoscopic and robotic LPND for advanced rectal cancer. In this study, the authors compared 50 and 35 consecutive patients undergoing robotic and laparoscopic LPND performed by a single specialized surgeon. They performed LPND when there was suspected metastatic LPNs based on a pretreatment radiologic examination. The percentage of preoperative CRT was not significantly different between groups (82% in the robotic and 69% in the laparoscopic group). For unilateral LPND, the mean operative time was not significantly different, but the estimated blood loss (EBL) was significantly lower in the robotic group than in the laparoscopic group (34.6 *vs.* 50.6 mL, P=0.002). It might be difficult to say that this small difference (15 mL) of EBL is clinically relevant, but the EBL in this study was much lower than that reported in the JCOG 0212 trial (15). The percentage of pathological LPN metastasis (28% in robotic *vs.* 41% in laparoscopic group) was adequately high. Importantly, the incidence of urinary retention was significantly lower in the robotic than in the laparoscopic approach (4% *vs.* 20%). Although the follow-up period is still short (median follow-up of 26.3 months), the local recurrence rate was excellent considering the high rate of pathological LPL metastasis (6.0% and 11.4% in the robotic and laparoscopic groups, respectively). This study suggests that the robotic approach might enable more meticulous dissection, resulting in less blood loss and less urinary dysfunction compared with the laparoscopic approach in LPND when performed by expert robotic surgeons.

Recently, the results of the ROLARR randomized clinical trial comparing robotic versus laparoscopic surgery for rectal cancer have been published (18). In this study, the conversion rate to open surgery as the primary endpoint was not significantly different between the robotic and laparoscopic groups (8.1% *vs.* 12.2%), and all the other secondary endpoints, including circumferential resection margin, postoperative complications, and urinary and sexual dysfunction, were also not significantly different. These findings suggest that generalized use of the robotic approach for rectal cancer cannot be justified. However, a subgroup analysis showed that the conversion rate was lower in the robotic approach than in the laparoscopic approach (8.7% *vs.* 16.0%), suggesting that the robotic approach might offer a benefit in the narrower male pelvis. In this sense, robotic surgery might still potentially offer a benefit in a technically challenging procedure such as LPND.

The results of the Kim's study cannot be generalized at present because their study is a retrospective, single-institutional study and LPND was performed by a single surgeon who is an expert both in laparoscopic and robotic surgery. Apart from the technical issues, before LPND is accepted as the standard procedure for patients with suspected LPN metastasis worldwide, the issue of an optimal indication of LPND considering the balance between the positive rate of pathological LPN metastasis and potentially increased postoperative complications must be solved. To shed light on this problem, multi-institutional large data will be necessary because of the limited number of rectal cancer patients with pathological LPN metastasis after CRT in a single institution. Regarding the best

approach for LPND, multi-institutional data might be useful, but we have to carefully analyze such data because the prior experiences and proficiencies of laparoscopic or robotic LPND might be considerably different among surgeons. Further studies are warranted about the best indication and best approach for LPND in rectal cancer treated with preoperative CRT.

Acknowledgments

Funding: None.

Footnote

Provenance and Peer Review: This article was commissioned by the editorial office, *Annals of Laparoscopic and Endoscopic Surgery*. The article did not undergo external peer review.

Conflicts of Interest: The author has completed the ICMJE uniform disclosure form (available at http://dx.doi.org/10.21037/ales.2018.01.07). The author has no conflicts of interest to declare.

Ethical Statement: The author is accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

References

1. Watanabe T, Muro K, Ajioka Y, et al. Japanese Society for Cancer of the Colon and Rectum (JSCCR) guidelines 2016 for the treatment of colorectal cancer. Int J Clin Oncol 2017. [Epub ahead of print].
2. Akiyoshi T, Watanabe T, Miyata S, et al. Results of a Japanese nationwide multi-institutional study on lateral pelvic lymph node metastasis in low rectal cancer: is it regional or distant disease? Ann Surg 2012;255:1129-34.
3. Fujita S, Mizusawa J, Kanemitsu Y, et al. Mesorectal Excision With or Without Lateral Lymph Node Dissection for Clinical Stage II/III Lower Rectal Cancer (JCOG0212): A Multicenter, Randomized Controlled, Noninferiority Trial. Ann Surg 2017;266:201-7.
4. van Gijn W, Marijnen CA, Nagtegaal ID, et al. Preoperative radiotherapy combined with total mesorectal excision for resectable rectal cancer: 12-year follow-up of the multicentre, randomised controlled TME trial. Lancet Oncol 2011;12:575-82.
5. Sauer R, Liersch T, Merkel S, et al. Preoperative versus postoperative chemoradiotherapy for locally advanced rectal cancer: results of the German CAO/ARO/AIO-94 randomized phase III trial after a median follow-up of 11 years. J Clin Oncol 2012;30:1926-33.
6. Kim MJ, Kim TH, Kim DY, et al. Can chemoradiation allow for omission of lateral pelvic node dissection for locally advanced rectal cancer? J Surg Oncol 2015;111:459-64.
7. Kusters M, Slater A, Muirhead R, et al. What To Do With Lateral Nodal Disease in Low Locally Advanced Rectal Cancer? A Call for Further Reflection and Research. Dis Colon Rectum 2017;60:577-85.
8. Dharmarajan S, Shuai D, Fajardo AD, et al. Clinically enlarged lateral pelvic lymph nodes do not influence prognosis after neoadjuvant therapy and TME in stage III rectal cancer. J Gastrointest Surg 2011;15:1368-74.
9. Shihab OC, Taylor F, Bees N, et al. Relevance of magnetic resonance imaging-detected pelvic sidewall lymph node involvement in rectal cancer. Br J Surg 2011;98:1798-804.
10. Akiyoshi T, Ueno M, Matsueda K, et al. Selective lateral pelvic lymph node dissection in patients with advanced low rectal cancer treated with preoperative chemoradiotherapy based on pretreatment imaging. Ann Surg Oncol 2014;21:189-96.
11. Ishihara S, Kawai K, Tanaka T, et al. Oncological Outcomes of Lateral Pelvic Lymph Node Metastasis in Rectal Cancer Treated With Preoperative Chemoradiotherapy. Dis Colon Rectum 2017;60:469-76.
12. Liang JT. Technical feasibility of laparoscopic lateral pelvic lymph node dissection for patients with low rectal cancer after concurrent chemoradiation therapy. Ann Surg Oncol 2011;18:153-9.
13. Oh HK, Kang SB, Lee SM, et al. Neoadjuvant chemoradiotherapy affects the indications for lateral pelvic node dissection in mid/low rectal cancer with clinically suspected lateral node involvement: a

multicenter retrospective cohort study. Ann Surg Oncol 2014;21:2280-7.
14. Lim SB, Yu CS, Kim CW, et al. Clinical implication of additional selective lateral lymph node excision in patients with locally advanced rectal cancer who underwent preoperative chemoradiotherapy. Int J Colorectal Dis 2013;28:1667-74.
15. Fujita S, Akasu T, Mizusawa J, et al. Postoperative morbidity and mortality after mesorectal excision with and without lateral lymph node dissection for clinical stage II or stage III lower rectal cancer (JCOG0212): results from a multicentre, randomised controlled, non-inferiority trial. Lancet Oncol 2012;13:616-21.
16. Ogura A, Akiyoshi T, Nagasaki T, et al. Feasibility of Laparoscopic Total Mesorectal Excision with Extended Lateral Pelvic Lymph Node Dissection for Advanced Lower Rectal Cancer after Preoperative Chemoradiotherapy. World J Surg 2017;41:868-75.
17. Kim HJ, Choi GS, Park JS, et al. Selective lateral pelvic lymph node dissection: a comparative study of the robotic versus laparoscopic approach. Surg Endosc 2017. [Epub ahead of print].
18. Jayne D, Pigazzi A, Marshall H, et al. Effect of Robotic-Assisted vs Conventional Laparoscopic Surgery on Risk of Conversion to Open Laparotomy Among Patients Undergoing Resection for Rectal Cancer: The ROLARR Randomized Clinical Trial. JAMA 2017;318:1569-80.

doi: 10.21037/ales.2018.01.07
Cite this article as: Akiyoshi T. Selective lateral pelvic lymph node dissection through a robotic approach for rectal cancer treated with preoperative chemoradiotherapy: a long way for generalization. Ann Laparosc Endosc Surg 2018;3:10.

