



Central mesocolic and extended lymph node dissection for right colon cancer—does approach matter?

Hanumant Chouhan¹, Seon-Hahn Kim²

¹Division of Colorectal, Department of Surgery, ²Cancer Centre, Korea University Anam Hospital, Korea University College of Medicine, Seoul, Korea

Correspondence to: Professor Seon-Hahn KIM, MD, PhD, FACS. Division of Colorectal, Department of Surgery, Korea University Anam Hospital, Korea University College of Medicine, Seoul, Korea. Email: drkimsh@korea.ac.kr.

Comment on: Lee HJ, Choi GS. A novel robotic right colectomy for colon cancer via the suprapubic approach using the da Vinci Xi system: initial clinical experience. *Ann Surg Treat Res* 2018;94:83-7.

Received: 04 May 2018; Accepted: 14 May 2018; Published: 30 May 2018.

doi: 10.21037/ales.2018.05.06

View this article at: <http://dx.doi.org/10.21037/ales.2018.05.06>

In efforts to improve lymph node harvest, completeness of colon cancer resection, and to adequately stage the patient, many units around the world advocate complete mesocolic dissection (CME) and central vessel ligation (D3). Our concept of central vessel ligation (D3) is where dissection carried along the superior aspect of superior mesenteric artery (SMA), superior mesenteric vein (SMV) and ligation of colonic vessel high. This ensures complete removal of lymph nodes that may harbour tumour. However, we need to understand that there is significant variation in definitions D3 vascular ligation. The initial D3 nodal dissection proposed by Hochenberger *et al.* (1) involved kocherized the duodenum, and takedown of the mesenteric attachments to the duodenum, uncinate process of the pancreas, and removal of lymph nodes along the gastroepiploic artery including the infrapyloric area, with complete dissection of the fatty tissue along the superior border of SMV and SMA. Japanese Society for Cancer of the Colon and Rectum D3 dissection however, omits duodenal kocherization, and dissection of the gastroepiploic and infrapyloric nodes (2). Any survival advantage of duodenal kocherization is debatable, particularly in the context of increased surgical complication that can occur from this extended dissection. CME by preserving and keeping visceral fascia intact by sharp dissection along embryological planes has shown to improve 5-year survival (3) and disease-free survival (4) when compared to non-CME (conventional, non-standardized resection) (3). However, what defines a proper CME is still unclear and this calls for proper pathologic reporting of

specimen quality, similar to mesorectal reporting. Factors that are needed to be considered are proximal, distal resection margin, intact mesocolic package, and length of mesenteric tie.

Potential benefits of performing extended lymphadenectomy (D3) are complete removal of tumour bearing lymph nodes (1,5-8) and removal of potential 'skip' (9,10) lymph node metastasis. Approximately 3% to 5% of right colonic tumours metastasize to central mesocolic lymph nodes. Studies comparing D2 to D3 dissections have shown that tumours are upstaged from node negative disease to node positive diseases in approximately 5% of cases of D3 dissection (9,10). However, whether the survival difference seen in some of the studies with CME and D3 dissection compared to conventional and D2 dissection is just due to removal of central nodes is unknown, particularly in western population where majority of patients get D2 dissection. Studies that compared D2 to D3 lymphadenectomy have shown a survival advantage with D3 lymphadenectomy (1,11-13), however, majority of studies on this topic are older and do not adjust for modern chemotherapy regimens. Based on current data we can conclude that there is a survival difference from central mesocolic excision (standardized) but whether there is additional benefit from D3 dissection, particularly in western population is difficult to determine (14). We need a randomized control trial with proper assessment of pathological specimen and appropriate use of modern chemotherapy regimens to determine true benefit from

extended lymph node dissection.

Does approach on how you do CME and D3 right hemicolectomy matter? Now that minimally invasive techniques are well established in colon cancer surgery. Several studies have compared robotic with laparoscopic right hemicolectomy (15) and found to have similar surgical and oncological outcomes. Lee *et al.* have found that robotic D3 surgery is safe and feasible when compared to laparoscopic D3 right hemicolectomy (16). Meta-analysis comparing laparoscopic with robotic right hemicolectomy found robotic surgery to be associated with reduced blood loss, reduced postoperative complications, faster recovery of bowel function, however longer operative time (15). Robotic surgery also has some added advantages such as 3D magnified vision, greater range of motion, stable camera platform, and now ability to do multi-quadrant surgery (with XI system) without having to redock (17). However, use of robotic surgery comes with added cost which is certainly a huge factor in countries with public health system. The advantage of suprapubic port placement with robotic right hemicolectomy using the da Vinci Xi system, intracorporeal anastomosis and then retrieval of specimen through a Pfannenstiel incision as described by Lee *et al.* (16) is certainly appealing particularly with regards to the amount of postoperative pain patients may have, and rate of incisional hernias (18-20). However, this can also be achieved by doing an intracorporeal anastomosis and specimen extraction through Pfannenstiel incision using laparoscopic platform as well. The practice of intracorporeal anastomosis, particularly in advance cancer is questionable and whether this technique is oncologically safe is yet to be determined. It is difficult to draw any conclusion based on outcome data on novel robotic right hemicolectomy via suprapubic approach as described in Lee *et al.* (16) study, mainly because of small number of patients in this study (n=5) and low body mass index (BMI) of patients operated on (BMI, 24.2). Even though the authors concluded that this approach can be performed successfully in selected patients, they did not describe how they selected those five patients. However, this study includes a good summary on technique of robotic right hemicolectomy via suprapubic approach, whether this approach becomes popular in future will likely depend on long term oncological data, technical feasibility in obese patients and ultimately cost of the procedure.

In conclusion, right hemicolectomy with CME and D3 dissection has shown to have survival advantage, however there are limitation with regards to standardization of

technique, specimen reporting and complication profile particularly in western patients. Whether this approach becomes standard of care in future will depend on evidence from three ongoing adequately powered randomized control trial (21-23).

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: Both authors have completed the ICMJE uniform disclosure form (available at <http://dx.doi.org/10.21037/ales.2018.05.06>). SHK serves as an unpaid editorial board member of *Annals of Laparoscopic and Endoscopic Surgery* from Jun 2016 to May 2018. HC has no conflicts of interest to declare.

Ethical Statement: The authors are 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.

Open Access Statement: This is an Open Access article distributed in accordance with the Creative Commons Attribution-NonCommercial-NoDerivs 4.0 International License (CC BY-NC-ND 4.0), which permits the non-commercial replication and distribution of the article with the strict proviso that no changes or edits are made and the original work is properly cited (including links to both the formal publication through the relevant DOI and the license). See: <https://creativecommons.org/licenses/by-nc-nd/4.0/>.

References

1. Hohenberger W, Weber K, Matzel K, et al. Standardized surgery for colonic cancer: complete mesocolic excision and central ligation--technical notes and outcome. *Colorectal Dis* 2009;11:354-64; discussion 64-5.
2. Watanabe T, Itabashi M, Shimada Y, et al. Japanese Society for Cancer of the Colon and Rectum (JSCCR) guidelines 2010 for the treatment of colorectal cancer. *Int J Clin Oncol* 2012;17:1-29.

3. West NP, Morris EJ, Rotimi O, et al. Pathology grading of colon cancer surgical resection and its association with survival: a retrospective observational study. *Lancet Oncol* 2008;9:857-65.
4. Bertelsen CA, Neuenschwander AU, Jansen JE, et al. Disease-free survival after complete mesocolic excision compared with conventional colon cancer surgery: a retrospective, population-based study. *Lancet Oncol* 2015;16:161-8.
5. Chow CF, Kim SH. Laparoscopic complete mesocolic excision: West meets East. *World J Gastroenterol* 2014;20:14301-7.
6. Yao HW, Liu YH. Re-examination of the standardization of colon cancer surgery. *Gastroenterol Rep (Oxf)* 2013;1:113-8.
7. Solon JG, Cahalane A, Burke JP, et al. A radiological and pathological assessment of ileocolic pedicle length as a predictor of lymph node retrieval following right hemicolectomy for caecal cancer. *Tech Coloproctol* 2016;20:545-50.
8. Chang GJ, Rodriguez-Bigas MA, Skibber JM, et al. Lymph node evaluation and survival after curative resection of colon cancer: systematic review. *J Natl Cancer Inst* 2007;99:433-41.
9. Liang JT, Lai HS, Huang J, et al. Long-term oncologic results of laparoscopic D3 lymphadenectomy with complete mesocolic excision for right-sided colon cancer with clinically positive lymph nodes. *Surg Endosc* 2015;29:2394-401.
10. Liang JT, Huang KC, Lai HS, et al. Oncologic results of laparoscopic D3 lymphadenectomy for male sigmoid and upper rectal cancer with clinically positive lymph nodes. *Ann Surg Oncol* 2007;14:1980-90.
11. Slanetz CA Jr, Grimson R. Effect of high and intermediate ligation on survival and recurrence rates following curative resection of colorectal cancer. *Dis Colon Rectum* 1997;40:1205-18; discussion 18-9.
12. Bokey EL, Chapuis PH, Dent OF, et al. Surgical technique and survival in patients having a curative resection for colon cancer. *Dis Colon Rectum* 2003;46:860-6.
13. Storli KE, Sondena K, Furnes B, et al. Short term results of complete (D3) vs. standard (D2) mesenteric excision in colon cancer shows improved outcome of complete mesenteric excision in patients with TNM stages I-II. *Tech Coloproctol* 2014;18:557-64.
14. Killeen S, Mannion M, Devaney A, et al. Complete mesocolic resection and extended lymphadenectomy for colon cancer: a systematic review. *Colorectal Dis* 2014;16:577-94.
15. Xu H, Li J, Sun Y, et al. Robotic versus laparoscopic right colectomy: a meta-analysis. *World J Surg Oncol* 2014;12:274.
16. Lee HJ, Choi GS. A novel robotic right colectomy for colon cancer via the suprapubic approach using the da Vinci Xi system: initial clinical experience. *Ann Surg Treat Res* 2018;94:83-7.
17. Ozben V, Cengiz TB, Atasoy D, et al. Is da Vinci Xi Better than da Vinci Si in Robotic Rectal Cancer Surgery? Comparison of the 2 Generations of da Vinci Systems. *Surg Laparosc Endosc Percutan Tech* 2016;26:417-23.
18. Fanning J, Pruett A, Flora RF. Feasibility of the Maylard transverse incision for ovarian cancer cytoreductive surgery. *J Minim Invasive Gynecol* 2007;14:352-5.
19. Levrant SG, Bieber E, Barnes R. Risk of Anterior Abdominal Wall Adhesions Increases with Number and Type of Previous Laparotomy. *J Am Assoc Gynecol Laparosc* 1994;1:S19.
20. Benlice C, Stocchi L, Costedio MM, et al. Impact of the Specific Extraction-Site Location on the Risk of Incisional Hernia After Laparoscopic Colorectal Resection. *Dis Colon Rectum* 2016;59:743-50.
21. Aleksei Karachun PD. Study of Oncological Outcomes of D3 Lymph Node Dissection in Colon Cancer (COLD). Ongoing-Recruiting October 2017.
22. Zheng M. Standardization of Laparoscopic Surgery for Right Hemi Colon Cancer (SLRC). December 2016.
23. Yi X. Investigate the Radical Extent of Lymphadenectomy of Laparoscopic Right Colectomy for Colon Cancer (RELARC). October 26, 2016.

doi: 10.21037/ales.2018.05.06

Cite this article as: Chouhan H, KIM SH. Central mesocolic and extended lymph node dissection for right colon cancer—does approach matter? *Ann Laparosc Endosc Surg* 2018;3:51.