Letter to the Editor

Is it time to define complete mesocolic excision as a standardized colon cancer surgery?

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Provenance: This is an Invited article commissioned by our Section Editor Dali Sun (Second Affiliated Hospital of Kunming Medical University, Kunming, China).

Response to: Negoi I, Beuran M, Hostiuc S, *et al*. Complete mesocolic excision for colon cancer is technically challenging but the most oncological appealing. Transl Gastroenterol Hepatol 2018;3:79.

Received: 18 November 2018; Accepted: 20 November 2018; Published: 27 November 2018.

doi: 10.21037/tgh.2018.11.04

View this article at: http://dx.doi.org/10.21037/tgh.2018.11.04

We appreciate that Negoi *et al*. (1) agree with us on the oncological benefit of complete mesocolic excision (CME) in colon cancer, which is one of the primary objectives of our article (2) and the rationale to advocate the standardization and quality control of colon cancer surgery. The general view of colorectal surgeons is that introduction of total mesorectal excision results in revolutionary improvement in rectal cancer surgery, thereby improving prognosis (3). In contrast, in spite of nearly 10 years since the introduction of CME, its safety and efficiency is controversial (4). This may be owing to the lack of quality control in previous studies. Not all surgeries followed the standards of the CME group, which might affect the confounding factors of prognosis (4).

Theoretically, CME comprises removing the entire embryological mesocolon from the viscera to the parietal planes in the horizontal direction and ligating the main artery pedicle at the root in the vertical direction (5). For the horizontal direction, the mesocolic plane was not considered important in colon cancer surgery until Bokey *et al*. proposed that mobilization of the colon along anatomic planes improved the overall 5-year survival from 48.1% to 63.7% (P<0.0001) (6). West *et al*. took it one step further by retrospective analysis of specimens from colon cancer surgeries, which showed an increase in 5-year overall survival achieved with mesocolic plane surgery compared with that in muscularis propria and intramesocolic plane surgery (7). However, the anatomical and histopathological evidence on rationale for keeping the visceral fascia intact was inadequate. Our previous study (8) showed that the original visceral and parietal fascia could be recovered by sharp separation. Meanwhile, the left and right sides of the visceral fascia were continuous, whereas the parietal fascia covered the kidneys, ureters, and reproductive blood vessels and passed along the superior and inferior mesenteric vasculature. Moreover, the visceral fascia was a natural barrier to the migration of tumor cells. Therefore, surgery in this plane is safe and can achieve en bloc resection ontologically. Further analyses on the effect of surgical plane on prognosis would be discussed in the 5 years results of our study.

For the vertical direction, region of lymphadenectomy is another core feature of colon cancer surgery. CME demands ligating the main artery pedicle at the root because of the mesenteric origin from the superior and inferior mesenteric artery, which allows maximal dissection of the regional lymph nodes. Our study (2), as well as many other studies (4), showed that CME was associated with a greater number of total lymph nodes compared with non-CME. Increased lymph node harvest is an important factor in

support of CME because of two hypotheses: stage migration and potential to improve prognosis. Many surgeons prefer D2 surgery for colon cancer treatment mainly due to the possible surgical complications in D3 surgery and fewer apical lymph node metastases (9). A previous study showed that CME was associated with more surgical complications (RR 1.23, 95% CI: 1.08–1.40) than non-CME (4), although there were no significant differences in the postoperative complications between the CME and non-CME groups in our study (2). This is attributed to the comprehensive implementation of the Japanese D3 surgery in China over the last two decades. Chinese colorectal surgeons were familiar with the technique of central ligation before the concept of CME was introduced. Moreover, all surgeries in our study were performed by specialized colorectal surgeons with more than 20 years' experience. Therefore, elaborate surgical anatomy should be studied during surgery for reducing severe surgical complications, such as Henle trunk injury and chyle leakage. On the other hand, extended lymphadenectomy provided an oncological benefit because of the phenomenon of lymph nodes skip metastases or undetected lymph nodes micrometastases. Finally, the routine adjuvant chemotherapy for Stage III colon cancer might further evaluate the effectiveness and risk after en bloc resection of the involved mesocolon and regional lymph nodes (10).

Therefore, CME is associated with oncological benefit and acceptable surgical risks when performed by experienced surgeons. In our viewpoint, one of the major purposes of our study is to highlight the need for standardization of colon cancer surgery.

Acknowledgements

None.

Footnote

Conflicts of Interest: The authors have no conflicts of interest to declare.

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doi: 10.21037/tgh.2018.11.04
Cite this article as: Wang C, Gao Z, Shen Z, Jiang K, Wang S, Ye Y. Is it time to define complete mesocolic excision as a standardized colon cancer surgery? Transl Gastroenterol Hepatol 2018;3:98.

