

The incomplete story of complete mesocolic excision

Heald and colleagues first advocated for adoption of total mesorectal excision to solve a specific problem—incidence of local recurrence after rectal cancer resection was as high as 20–45%.^{1,2} By removing the mesorectum completely, local recurrence was substantially reduced. Total mesorectal excision revolutionised rectal cancer surgery; however, can following embryological planes for more proximal tumours produce similar gains?

In *The Lancet Oncology*, Claus Bertelsen and colleagues³ reported the 5-year oncological outcomes of patients with right-sided colon cancer treated by complete mesocolic excision compared with conventional unstandardised resections. In their population-based cohort study, including patients from four hospitals in Denmark, of which one performed complete mesocolic excision and the other three performed conventional resections, the authors report an absolute risk of recurrence of 8.2% (95% CI 4.0–12.4). The authors found compelling improvements in recurrence and survival with complete mesocolic excision; however, the challenges faced in treating colon cancer differ from those in treating rectal cancer, and whether the outcome associations found in this study are truly due to complete mesocolic excision is unclear.

Local recurrence for colon cancer is typically reported in single digits, suggesting that standard surgery adequately controls against local recurrence. Still, given the common principles of complete mesocolic excision and total mesorectal excision, a reduction in local recurrence with complete mesocolic excision would be expected. In a systematic review of complete mesocolic excision studies,⁴ the only studies that showed

reductions in local recurrence were those that compared patients undergoing complete mesocolic excision with historic controls. Data on local recurrence alone—the primary mechanism by which complete mesocolic excision should have an effect—are not presented by Bertelsen and colleagues.³

Could complete mesocolic excision reduce distant recurrence? Here, too, the results are puzzling. Both the study sites that performed complete mesocolic excisions and those that performed conventional resection had high lymph node yields and found no evidence of upstaging. The authors suggest that the more extensive lymph node dissection in patients with Union for International Cancer Control stage I–II disease removes nodal metastases too small to be detected by standard pathology, and might have resulted in survival benefits as high as 10% in these patients. This theory is challenging to accept. Additionally, survival benefits in patients with stage III disease attributed to complete mesocolic excision are larger than those typically achieved with standard chemotherapy in this group.⁵

If not due to complete mesocolic excision, why might these large differences have been found? The higher frequency of multivisceral resections at sites performing conventional resections suggests potential for selection bias. Patients that underwent conventional resections were identified from a national database, whereas patients that underwent complete mesocolic excision were identified using an institutional database. Furthermore, differences existed in approaches to assess recurrence at hospitals performing complete mesocolic excision and those performing conventional resections, which was done without blinding.

Although complete mesocolic excision might have benefits, whether these benefits exist even in expert centres remains unclear.

Most surgeons do not undertake this technically challenging procedure, and wide adoption might cause harm. Randomised clinical trials showing that benefits truly outweigh risks are needed before advocating for widespread uptake.

We declare no competing interests.

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- 1 Heald RJ, Husband EM, Ryall RD. The mesorectum in rectal cancer surgery—the clue to pelvic recurrence? *Br J Surg* 1982; **69**: 613–16.
- 2 MacFarlane JK, Ryall RD, Heald RJ. Mesorectal excision for rectal cancer. *Lancet* 1993; **341**: 457–60.
- 3 Bertelsen CA, Neuenschwander AU, Jansen JE, et al. 5-year outcome after complete mesocolic excision for right-sided colon cancer: a population-based cohort study. *Lancet Oncol* 2019; **20**: 1556–65.
- 4 Alhassan N, Yang M, Wong-Chong N, et al. Comparison between conventional colectomy and complete mesocolic excision for colon cancer: a systematic review and pooled analysis: a review of CME versus conventional colectomies. *Surg Endosc* 2019; **33**: 8–18.
- 5 André T, Boni C, Navarro M, et al. Improved overall survival with oxaliplatin, fluorouracil, and leucovorin as adjuvant treatment in stage II or III colon cancer in the MOSAIC trial. *J Clin Oncol* 2009; **27**: 3109–16.