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Editorial

Can Complete Mesocolon Excision Be Considered the Treatment of Choice in Right Hemicolectomy for Cancer?☆

¿Se puede considerar la escisión completa del mesocolon el tratamiento de elección en la hemicolectomía derecha por cáncer?

Over the last few decades, oncological outcomes after colon cancer have not improved as much as outcomes for rectal cancer. It has been a strong emphasis on improving the management of rectal cancer, resulting in a significant improvement in its prognosis. The adoption of dissection at the mesorectal plane has revolutionised the surgical outcomes for rectal cancer.[1] However, right-sided colon cancers are associated with worse 5-year overall survival for stage II and III disease.[2] Hohengerber published a reduction in local recurrence and improved survival curves in patients with right-sided colon cancer undergoing complete mesocolic excision (CME) and central vascular ligation (CVL).[3] He utilised the same concept postulated by Bill Heald for rectal cancer,[1] following the embryological planes but applied to the CME plane.

Although the terminology related to complete mesocolon excision yet to be standardised, there seem to be 3 agreed key components for CME: First, a standardised and meticulous dissection along the mesocolon plane, removing an intact mesocolon. This step is essential to improve disease free survival and overall survival.[4,5] Second, CVL, which is a procedure that involves exposure of the colonic arteries with a central tie at their origin.[3] Central vascular ligation that ensures lymph node dissection around the superior mesenteric vessels (D3) can lead to a maximum lymph node harvested.[6] Although, there are some doubts about its prognostic efficacy, some evidence has shown lower rates of local recurrence.[7] Lastly, this technique postulates a colonic resection 10 cm beyond the tumour. Although there is no good evidence to justify the oncological advantage of this level,[8] it is arguably that the combination of CME with CVL is likely to produce a large specimen.

Although there are no results from randomised controlled trials (RCT) yet to support CME, there is current evidence including large cohort studies demonstrating the oncological benefits of this technique. Early oncological outcomes presented by West et al. suggested a 15% increase in survival when compared CME with mesocolic defects cases.[9] One may argue that mesocolic defects indicate poor techniques for right hemicolectomies, and a poor-quality plane surgery with large defects in the mesocolon will potentially result in poor oncological outcomes.

In Denmark, Bertelsen et al. perform CME as a standard for right-sided colon cancer since 2008. They have recently reported in *The Lancet Oncology* reduced rates of 5-year local recurrence for all stages I–III (9.7% vs. 17.9% after standard right colectomy, P=.000), and the absolute effect increases with increasing stage.[10] They acknowledged, however, the lack of standardisation of the surgical technique and pathological quality control.

It is acknowledged that CME is technically challenging[11] and requires intensive training to acquire these advanced technical skills, either laparoscopic or robotically. Higher rate of intraoperative organ injuries and or greater postoperative morbidity[11] and mortality[12] have been of a major concern for this technique. Additionally, it has some technique-related specific complications such as delayed gastric emptying,[13] resulting in prolonged recovery and delayed discharge. Nonetheless, there is evidence on the contrary from other experienced groups demonstrating similar rates of complications with CME compared to conventional surgery.[10,14]

These discrepancies in outcomes may be related to the learning curve of the surgeons, although there is little in the literature about this.[15] Arguably, CME may be not indicated for

☆ Please cite this article as: Tejedor P, Francis N. ¿Se puede considerar la escisión completa del mesocolon el tratamiento de elección en la hemicolectomía derecha por cáncer? Cir Esp. 2021;99:255–257.

every patient with right-sided colonic cancer and should not be performed by every colorectal specialist. Appropriate case selection is required, particularly in the early phase of the learning curve to justify the indication for this technically challenging procedure with potential high morbidity. Additionally, and similar to any advanced surgical techniques, appropriate volume of cases are required to maintain the required skills. This might justify a call for centralization for this procedure.

The aforementioned factors would undoubtedly have contributed to the relatively slow uptake of this procedure in Western Europe and a number of actions are required first to aid its safe wider dissemination. High level evidence is required to proof the efficacy and true oncological benefits of this advanced technique against the likelihood potential operative and postoperative risks. Results from ongoing RCT such as the 'RELARC' trial[16] or the Russian trial 'COLD'[17] are awaiting. There are little evidence to support a particular approach for CME such as open, laparoscopic or robotic[18] and the approach must be left to the discretion of surgeon and local training expertise and resources. When CME is indicated, it is arguable that a sound oncologically CME procedure should be performed, regardless of whether a laparoscopic, open or robotic approach is executed.

Since it is acknowledged that CME is a technically demanding procedure, optimal training is required to ensure appropriately trained surgeons that can competently perform this operation and contribute to the RCT. A training curriculum for this operation needs to be designed and implemented to address the cognitive and technical demands for this technique. A comprehensive understanding of the anatomy is essential within training programmes, to illustrate the embryological anatomy of mesocolon and the variation of vasculature of the right colon. Although there is little evidence available to support its benefit, cadaveric workshops seem to be valuable resources to demonstrate the technique of CME, given by expert faculty and prior to undertaking clinical training. A structure proctorship programme has proven in a number of training programmes[19,20] to be essential to ensure the learner can safely commend this procedure with minimal harm to patient, at they are proctored by experienced surgeons. Objective assessment tool, such as Global Assessment Score can be useful aids to enhance learning during the proctorship programme.

Given the lack of high level evidence of CME, the perceived challenges with the technique and the lack of structured validated training platforms, CME does not appear to be ready as a gold standard practice. Experts in this field should draw from the existing knowledge and provide recommendations and guidance to support current practice and ensure patient safety, whilst waiting results from the randomised controlled trials.

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Patricia Tejedor, Nader Francis*
Yeovil District Hospitals NHS Foundation Trust, United Kingdom

*Corresponding author.
E-mail address: nader.francis@ydh.nhs.uk (N. Francis).

2173-5077/