

Can the quality of colonic surgery be improved by standardization of surgical technique with complete mesocolic excision?

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Abstract

Aim we analysed the influence of standardization of colon cancer surgery with complete mesocolic excision (CME) on the quality of surgery measured by the pathological end-points of number of harvested lymph nodes, high tie of supplying vessels, plane of mesocolic resection and rate of R0 resection.

Method One hundred and ninety-eight patients with colonic carcinoma who underwent radical surgery between September 2007 and February 2009 were divided into two groups, including those undergoing surgery before (93) or after (105) 1 June 2008, when complete mesocolic excision (CME) was introduced as standard in our hospital.

Results The overall mean high tie increased from 7.1 (CI, 6.5–7.6) to 9.6 (8.9–10.3) cm ($P < 0.0001$) and the mean number of harvested lymph nodes from 24.5 (22.8–26.2) to 26.7 (24.6–28.8) ($P = 0.0095$). There were no significant increases in these end-points in open right

hemicolectomy, and in laparoscopic sigmoid resection the number of lymph nodes did not increase significantly. The plane of mesocolic resection, the rate of R0 resection and the risk of complications did not change significantly. The median (range) length of hospital stay increased from 4 (2–62) to 5 (2–71) days ($P = 0.04$).

Conclusion Standardization of colonic cancer surgery with CME seems to improve the quality of surgery without increasing the risk of complications.

Keywords Colon cancer, complete mesocolic excision, quality of surgery, harvested lymph nodes, vascular high tie

What is new in this paper

The quality of colon surgery, measured in part by lymph node yield, can be improved by standardization of surgical technique with complete mesocolic excision.

Introduction

Long-term survival after surgery for rectal cancer in Denmark has increased in the last decade following the implementation of total mesorectal excision (TME) [1]. The concept of TME [2] is based on sharp dissection in embryological planes leading to a surgical specimen with an intact mesorectal fascia, which covers the tumour, lymphatic vessels and regional lymph nodes (LNs). Long-term survival after colon cancer has not improved in the same period and is today in Denmark lower than after

rectal cancer [3]. One reason for this unacceptable lack of improvement of survival could be inadequate surgery.

As in the rectum, the mesocolon containing lymphatic vessels and the regional LNs is enveloped on both sides by a visceral fascia. Based on these embryological and anatomical facts, the principles of complete mesocolic resection (CME) have been reintroduced [4,5]. By performing a sharp dissection between the visceral fascia of the mesocolon and the surrounding structures with exposure and high tie of colonic arteries and veins, a maximal regional LN harvest can be ensured. If the tumour is attached to extra-colonic structures the dissection plane is extended to the next embryological plane. This is made as an *en-bloc* resection [4].

Hohenberger *et al.* [4] have presented long-term survival rates exceeding those for any department in

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