

# Standardized surgery for colonic cancer: complete mesocolic excision and central ligation – technical notes and outcome

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## Abstract

**Objective** Total mesorectal excision (TME) as proposed by R.J. Heald more than 20 years ago, is nowadays accepted worldwide for optimal rectal cancer surgery. This technique is focused on an intact package of the tumour and its main lymphatic drainage.

This concept can be translated into colon cancer surgery, as the mesorectum is only part of the mesenteric planes which cover the colon and its lymphatic drainage like envelopes. According to the concept of TME for rectal cancer, we perform a concept of complete mesocolic excision (CME) for colonic cancer. This technique aims at the separation of the mesocolic from the parietal plane and true central ligation of the supplying arteries and draining veins right at their roots.

**Method** Prospectively obtained data from 1329 consecutive patients of our department with RO-resection of

colon cancer between 1978 and 2002 were analysed. Patient data of three subdivided time periods were compared.

**Results** By consequent application of the procedure of CME, we were able to reduce local 5-year recurrence rates in colon cancer from 6.5% in the period from 1978 to 1984 to 3.6% in 1995 to 2002. In the same period, the cancer related 5-year survival rates in patients resected for cure increased from 82.1% to 89.1%.

**Conclusion** The technique of CME in colon cancer surgery aims at a specimen with intact layers and a maximum of lymphnode harvest. This is translated into lower local recurrence rates and better overall survival.

**Keywords** Colon cancer, Standardization surgical treatment, complete mesocolic excision

## Introduction

With the standardization of total mesorectal excision (TME), [1] outcome of rectal cancer surgery was significantly improved, mainly because of reduction of local recurrence. This concept of TME is based upon sharp dissection following embryological anatomical planes [2–4] namely with sharp separation of the visceral fascia ('mesorectum', 'fascia pelvis visceralis') from the parietal plane ('fascia endopelvina' 'parietal fascia', 'somatic fascia', 'Waldeyer's plane' 'Denonvillier's fascia') leading to a surgical specimen with an intact coverage, not only of the rectal tumour, but also of the main lymphatic drainage including the majority of regional lymph nodes, lymph vessels and surrounding fat tissue lying within this mesorectum.

However, the embryological planes are not limited to the mesorectal layers but continue to the sigmoid and

descending colon on the left side, running finally posteriorly behind the pancreas and around the spleen, also to include the duodenum with the head of the pancreas, the caecum with the ascending colon and the mesenteric root on the right side.

As with the rectum, in colonic cancer – except for very advanced cases – the lymphatic spread primarily follows the lymph drainage along the supplying arteries. Within these compartments, the mesocolon is covered by the visceral fascia from both sides like envelopes. This invoted the concept of complete mesocolic excision (CME) as a surgical technique with sharp dissection of the visceral plane from the retroperitoneal (parietal = somatic) one, aiming finally to avoid any breaching of the visceral fascia layer, which potentially may lead to tumour spread within the peritoneal cavity. With this procedure, the origin of the colonic arteries can be well exposed and tied centrally at their origin to ensure maximal harvest of the regional lymphnodes. The latter is associated with improved survival [5–10].

This concept of standardized resections with CME and central tie of the artery supply for colonic malignancies

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