What is a complete mesocolic excision for colon cancer?
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What are the principles of surgery for colon cancer?

- Colectomy with en bloc removal of all associated regional lymph nodes and involved adjacent structures.
- The length of bowel resected is governed by the blood supply with a minimum of 5 cm margin on both sides of the tumor.
- The mesentery should be removed to the origin of the primary feeding vessel.


Surgical technique and outcomes

- Can we improve on the surgical techniques that have been taught to us for decades in residencies and fellowships?
- Is it possible to perform surgery for colorectal cancer with improved oncologic outcomes superior to our predecessors?
Total Mesorectal Excision (TME) for Rectal Cancer

- Proposed by RJ Heald in 1982.
- Novel technique that emphasized removal of the intact package of rectal tumor and its main lymphatic drainage.
- Total mesorectal excision: Sharp dissection under direct vision, maintenance of the integrity of the visceral fascia in the specimen, and the pursuit of a negative circumferential resection margin.
- Reduced local recurrence for mid-rectal tumors from 40% to <10%.
- Now accepted worldwide as the technique for optimal rectal cancer surgery (2002).
- Laparoscopic TME is standard for most colorectal surgeons.

Total mesorectal excision for mid-rectal cancer

High ligation of the vessels, clear distal and circumferential margins. Intact, glistening fascia propria of lymph node-bearing mesorectum.

What is a Complete Mesocolic Excision (CME) for colon cancer?

- Proposed in 2008 by W Hohenberger
- Principles are identical to TME
- 1) Dissection between the mesenteric plane and the parietal fascia and removal of the mesentery within a complete envelope of fascia and visceral peritoneum that contain all lymph nodes draining the tumor area.
- 2) Perform a central vascular tie to remove all lymph nodes in the central (vertical direction).
- 3) Resection of an adequate length of bowel to remove involved pericolic lymph nodes in the longitudinal direction.

Complete mesocolic excision

A. Distance from tumor to vascular tie. B. Closest bowel to tie. C. Length of bowel. D. Area and quality of mesentery.
Results of Complete Mesocolic Excision

- W Hohenberger 2009
- 1329 consecutive R0 patients
- Open standard colectomy vs. CME
- Increased lymph node yield from 18 to 30
- Reduced 5 year local recurrence rates from 6.5% to 3.5%
- Increased cancer related 5 year survival rates from 82.1% to 89.1%.

Emphasis of CME for right sided cancers

- In left sided cancers, the standard procedure already mimics CME with high ligation of the IMA/IMV and separation of the mesentery from Gerota’s fascia. If you perform TME, this is natural.
- In right sided cancers, exposure of the superior mesenteric vessels with central vascular ligation and clearance of the mesentery over the pancreas is rarely routine.

Vascular Anatomy of the Colonic Mesentery

Standard Vs. CME 

Right Vs. Left
Conclusions

- Complete mesocolic excision has sound oncologic principles and can be done via open or laparoscopic techniques
- Advanced right and transverse colon cancers appear to have the most oncologic benefit of CME
- CME for right and transverse colon cancers will likely result in longer operative times
- High ligation, sharp dissection, avoidance of violation of visceral peritoneum, and greater proximal and distal margins will result in improved oncologic outcomes compared to traditional techniques for colon cancer

American Joint Commission on Cancer (AJCC)

- R0 - complete tumor resection with all margins histologically negative
- R1 - incomplete tumor resection with microscopic surgical resection margin involvement
- R2 - incomplete tumor resection with gross residual tumor that was not resected
Approach to colon cancer

- 2 stages
  - Oncologic (resection)
  - Reconstruction (anastomosis and recovery)

Tools

- Open
- Laparoscopic
- Hybrid
- Hand-assist
- Single incision
- Robotic

Complete Mesocolic Excision

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