

Doing a Better Colectomy: Can the Surgeon Go It Alone?

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Doing a Better Colectomy



Doing a Better Colectomy

- * In April of 2009, a Multidisciplinary Team was formed
 - * Nutrition, Nursing, Surgery, VIHA Admin, Anaesthesia
 - * All elective colectomies done at VGH from January 2009 to April 2009 were reviewed
- * 41 patients identified
 - * 24 malignancies
 - * Avg LoS 9 days (3-48)
 - * NHS 12 days , NZ 9 days
 - * 22% complication rate
 - * 5% Mortality Rate
 - * 3 bounce backs with admissions

Doing a Better Colectomy

- * Average Patient:

- * 74 year old male
- * Mildly obese
- * Previous Coronary Artery Disease
- * Sigmoid Colon Cancer

- * CR-POSSUM

- * Mortality rate: 3.5%

- * ACPGBI Mortality Model

- * Mortality rate: 5.7%

- * Average Patient:

- * 74 year old male
- * Mildly obese
- * Previous Angina
- * Exertional Angina
- * Mildly decreased LV ejection fraction

- * Cardiac Surgery Reporting System

- * Predicted mortality risk: 0.9%



“...when I said cut it out...I was referring to the flippant remarks.”

Doing a Better Colectomy

- * Kirchhoff et al. (2010), Patient Saf Surg
 - * Surgical Site Infection: 2-25% (Best estimate 10-15%)
 - * Anastomotic Leak: 3-15%
 - * Ileus: 8-12%
- * Major risk factors:
 - * Age
 - * Male Gender
 - * Malnutrition / Obesity
 - * ASA Class
 - * Cardiac Status
 - * Anemia
 - * OR time



"85% RECOVER WITH NO COMPLICATIONS. 60% OF THE REMAINING 15% WILL HAVE A SLOWER RECOVERY RATE, AND THE REMAINING 40% OF THE 15% MAY NEED ADDITIONAL TREATMENT."

Doing a Better Colectomy

- * Colon Cancer

- * Hendren et al (2010, DCR)

- * SEER Database review

- * 17,108 patients with stage 3 CRC

- * Median age 75

- * 18% of patients had a complication

- * Only 54% of patients with complications had chemotherapy vs 70% ($p < 0.0001$) OR 1.76 (1.59-1.95)

- * Complications: OR 2.04 for initiation of ChT > 8 weeks after surgery

Doing a Better Colectomy

- * Colon Cancer

- * Des Guetz et al. (EJ Cancer, 2010)

- * Meta analysis of 14 studies, 8 eligible for analysis

- * 13,158 patients

- * > 8 week delay of CT

- * Decreases OS (RR 1.2 (1.15-1.26))

Doing a Better Colectomy

- * Colon Cancer
 - * Cheung et al. (DCR, 2009)
 - * SEER database
 - * Stage 2/3 Rectal Cancer
 - * Median Interval of Surgery to ChT: 42 days
 - * 12% of patients waited > 3 or more months
 - * Median OS worse in those who waited > 12 weeks (54 vs 76 months, $p < 0.01$)
 - * Post-operative Hospital stay single most important predictor of delay
 - * (Age, Black)

Doing a Better Colectomy

- * Colon Cancer
 - * Bayraktar et al, U of Miami, 2010
 - * Chemotherapy started after 60 days post-op in 26% of patients
 - * 70% due to post-operative issues, 30% due to administrative issues
 - * OR 2.07 of decreased Overall Survival
 - * Lima et al, U of Alberta, 2011
 - * 1053 patients
 - * Stage 3 colon cancer
 - * 40% started treatment after 4 months from surgery
 - * Those who started chemotherapy after 3 months, had a 2.1 OR towards decreased Overall Survival

Doing a Better Colectomy

- * Colon Cancer

- * Hornbrook et al, Kaiser-Permanente, 2011

- * QoL indicators in 640 patients having undergone surgery for Colorectal Cancer

- * Even at 7 years out from surgery, early complications had one of the most significant impacts on QoL

- * More than the presence of an ostomy

Doing a Better Colectomy

- * So, what can I do as a surgeon?
- * Do Better Surgery Damn IT!
- * How much better?
 - * TME Education
 - * Laparoscopic Colectomy Programs
 - * Lymph node collection

Doing a Better Colectomy

- * Enhanced Recovery After Surgery Pathways
 - * Initially developed and popularized in Denmark by Henrik Kehlet
 - * Summarized by Lassen & ERAS Study Group, 2009
 - * Educate Patients
 - * Avoid Bowel Preps
 - * Reduce pre-operative fasting, and pre-op carb loading is a good idea
 - * Short term anaesthetics, with central blockade
 - * DVT Prophylaxis
 - * Single dose antibiotics
 - * Pre-operative Nausea Prophylaxis

Doing a Better Colectomy

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 - * Initially developed and popularized in Denmark by Henrik Kehlet
 - * Summarized by Lassen & ERAS Study Group, 2009
 - * Laparoscopic Surgery
 - * Avoid NG Tubes
 - * Keep patients warm, and reduce peri-operative crystalloid usage
 - * Do not place drains
 - * Lots of Tylenol
 - * Feed ASAP
 - * Mobilize effectively and early

Doing a Better Colectomy

- * Enhanced Recovery After Surgery Pathways
 - * Initially developed and popularized in Denmark by Henrik Kehlet
 - * Summarized by Lassen & ERAS Study Group, 2009
 - * Does it work?
 - * 3 Meta-Analyses
 - * Varadhan et al. (Nottingham), Eskicioglu et al. (Toronto) & Gouvas et al. (Imperial College)
 - * 2 days less mean stay
 - * Fewer peri-operative complications (RR of 0.61)
 - * \$7000/patient cost-savings

Doing a Better Colectomy

- * Enhanced Recovery After Surgery Pathways
 - * Decreased levels of immunologic stress (?)
 - * Hjort Jacobssen, Hvidore, 2005
 - * Decreased fatigue
 - * Decreased mid-day sleep
 - * Improved ability to walk outside, up stairs, and resume shopping

Doing a Better Colectomy

- * Enhanced Recovery After Surgery Pathways
 - * Is it just about the fast tracking?
 - * Donohoe et al. (Dublin), 2011
 - * Comprehensive assessment
 - * Pre-operative Counseling
 - * Modulation of expectations
 - * Aarts et al. (Toronto), 2011
 - * Implementation of ERAS pathways at 7 Academic Hospitals
 - * Pre-operative Counseling most significant impact on LoS

Doing a Better Colectomy

- * The Better Colectomy Project (Arriaga et al, 2009)
- * Study performed at Brigham Young Womens, Mass General & Faulkner Hospital in Boston
- * Identified, by consensus, 15 Key practices, and 22 Best practices
- * 370 patients were assessed for compliance

Doing a Better Colectomy

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- o. Intraoperative anastomotic testing of fecal diversion for
 - a. Anastomoses above 5 cm from the anal verge and below the peritoneal reflection, or
 - b. Stapled transanal end-to-end anastomosis, or
 - c. Nondiverted anastomosis within 5 cm of the anal verge
- 7. Fecal diversion for anastomosis within 5 cm of the anal verge

Thromboembolism prophylaxis

- 8. Mechanical and chemical prophylaxis for deep venous thrombosis administered/applied before operation
- 9. Mechanical and chemical prophylaxis for deep venous thrombosis administered/applied postoperatively

Preoperative assessment and optimization

- 10. Ostomy nurse consulted preoperatively for low anterior resections or planned ostomy
- 11. Beta blocker therapy given (unless contraindication present) for patients with serum creatinine >2 , mg/dL, age >65 yr, current tobacco use, history of angina, history of coronary artery disease, hypertension, congestive heart failure, high cholesterol, stroke, or diabetes
- 12. Anti-platelet medications held for at least 7 days preoperatively, unless documented contraindication present
- 13. Warfarin held for at least 4 days preoperatively, unless documented contraindication present
- 14. Cardiology or hospitalist consult obtained if critical preoperative

Doing a Better Colectomy

- + The Better Colectomy Project (Arriaga et al, 2009)
- + Only 14% of patients had perfect adherence to Best Practice
- + 11 of 37 practices were adhered to <60% of the time
- + 25% of patients had catheters left in too long
- + 50% were transfused without good reason
- + 59% were not worked up adequately for fever
- + 90% had CVL left in too long
- + 70% of patients did not comply with DVT guidelines

Doing a Better Colectomy

- + The Better Colectomy Project (Arriaga et al, 2009)
- + 10% did not have adequate peri-operative diabetic and cardiac care
- + 12% did not have pre-op labs, and 15% did not have type and screen
- + 17% did not stop warfarin, 31% continued on anti-platelets
- + 32% did not have adequate pre-operative cardiac workup
- + 50% did not consult an ET nurse
- + 71% had incomplete history and physicals
- + 9% did not get treatment within 6 weeks

Doing a Better Colectomy

* The Better Colectomy Project (Arriaga et al, 2009)

TABLE 5. Association Between Key Processes Missed and the Proportion of Patients With Postoperative Complications*

No. Key Processes Missed (Out of 15)	0	1	2	3	4+
Percentage of patients with one or more complications	6.9% (2/29)	15.3% (11/72)	21.3% (13/61)	29.2% (7/24)	41.7% (5/12)

*Mantel-Haenszel χ^2 test for trend, $P = 0.002$.

TABLE 7. Multivariate Analysis Testing the Association Between Key Processes Missed and the Proportion of Patients With One or More Complications, Adjusting for Age, and Comorbid Status*

Variable	Odds Ratio	95% Confidence Interval	<i>P</i>
No. key processes missed	1.442	1.03–2.01	0.0316
Comorbidity score	1.246	0.957–1.622	0.1029
Age >65 yr	1.373	0.605–3.115	0.4480

*Hospital-to-hospital variation adjusted for as a fixed effect in logistic regression.

Doing a Better Colectomy

- * Overarching goal:
 - * Utilizing practices based on best evidence, to optimize the individual patient's care and course through the medical system
- * Patient population
 - * All patients undergoing trans-abdominal colonic and/or rectal surgery on a non-emergent basis (including new ostomies)

Doing a Better Colectomy

- * Given:

- * A talented, goal-driven team of health care providers
- * Anaesthesiologists
- * Surgeons
- * Pre-Admission Clinic Staff
- * Office Staff
- * Surgical Nursing

Doing a Better Colectomy

- * *Having great components is not enough. We've been obsessed in medicine with having the best drugs, the best devices, the best specialists—but we've paid little attention to how to make them fit together well.*
- * *Anyone who understands systems will know immediately that optimizing parts is not a good route to system excellence*
- * *A famous thought experiment in which an attempt is made to build the world's greatest car by assembling the world's greatest car parts. We connect the engine of a Ferrari, the brakes of a Porsche, the suspension of a BMW, the body of a Volvo: "What we get, of course, is nothing close to a great car; we get a pile of very expensive junk"*

* *Gawande, Stanford Commencement, 2010*

Doing a Better Colectomy

- * Goals:

- * Pain free Surgery
- * Stress free Surgery

- * Surgical Stress

- * Pain
- * Sleep Disturbance
- * Immobilization
- * Restrictions
- * Diets
- * Fear of the unknown

Doing a Better Colectomy

- * Dynamic, involved and focused team
- * Minimally invasive techniques
- * Dynamic Pain Treatment
- * Mobilize and Feed
- * Active Patient Participation
- * Patient Education
 - * Booklets
 - * Nurses
- * Standardized Anaesthesia Protocols for intra-op and post -op management
- * Standardized Nursing Care
 - * Feed, move
- * Limit blood work
- * Remove catheters and drains

Doing a Better Colectomy

- * Standardized Pre-op Order Set
- * PAC Appt 1 week prior to surgery
- * Patient Education
 - * 30 mins of PAC time with a nurse
 - * Preparation
 - * Post-op recovery (in and out of hospital)

Doing a Better Colectomy

* Goals:

- * 80% of patients are home by Day 4
- * 80% of patients tolerate solid food on POD 2
- * 80% of patients stay home

* Achievements

- * Implemented at VGH in January of 2010 and RJH in March of 2011
- * 234 patients to date
- * Average LoS – 5.2 days
 - * (2-32 days)
- * 67% of patients are home by Day 4
- * 81% of patients are home by Day 5

Doing a Better Colectomy

* Goals:

- * 80% of patients are home by Day 4
- * 80% of patients tolerate solid food on POD 2
- * 80% of patients stay home

* Achievements

- * 12% bounce back rate
- * 70% of patients tolerating solid food at Day 3
- * 18% risk of peri-operative complications

Doing a Better Colectomy

- * Further Steps

- * Analyze those who did not succeed
- * Optimize pathway to improve outcomes
- * Continue to decrease post-operative stay
- * Oncologic patients now have guaranteed appointments at 3 weeks post-op

Doing a Better Colectomy

- * Nurse-Navigator

- * Every patient having an abdominal colorectal procedure will be seen by a Nurse Navigator to ensure:

- * Pre-operative education and counseling

- * Adequacy and Completeness of:

- * Pre-operative history

- * Comorbidities

- * Medication Profiles

- * Ensure appropriate pre-operative

- * Consultations

- * Medication modifications

Doing a Better Colectomy

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* Successes

- * Average stay down from 9.3 to 5.2
- * Over 234 patients, 960 hospital days saved

Doing a Better Colectomy

Doctors and scientists are now being asked to accept a new understanding of what great medicine requires. It is not just the focus of an individual artisan-specialist, however skilled and caring. And it is not just the discovery of a new drug or operation, however effective it may seem in an isolated trial. Great medicine requires the innovation of entire packages of care—with medicines and technologies and clinicians designed to fit together seamlessly, monitored carefully, adjusted perpetually, and shown to produce ever better service and results for people at the lowest possible cost for society.

* Gawande, Stanford Commencement, 2010

