

Institution of an enhanced recovery after surgery protocol for colorectal surgery in a large teaching community hospital decreases length of stay, improves functional status on discharge and lower cost.

Authors: Opeyemi Popoola, BSC, MD¹, R. Pitera¹, M. Gilder¹, L. Mullman¹, S. Lew¹, V. Chakravorty¹

¹ Saint Barnabas Medical Center, Livingston, New Jersey

Background

The Comprehensive Recovery Pathway (CRP) is an Enhanced Recovery After Surgery (ERAS) protocol for colorectal surgery. The anesthesia and surgery departments implemented the CRP as part of the PSH in April, 2015.

To improve patient outcomes and patient experience in individuals undergoing colorectal surgery with the primary endpoint of reducing the length of stay and decreasing the rate of discharge to other skilled nursing facilities (SNF).

Methods

A multidisciplinary team of physicians, nurses and the ancillary staff were educated about the program. The main components include patient education including a patient guidebook, peri-operative nutritional support, multi-modal pain management, early ambulation and early feeding. Surgeons were encouraged to place patients on the pathway by utilizing a CRP order set which included the post-operative elements of ERAS. We performed a prospective one-year comprehensive analysis of the outcomes for patients undergoing colon and rectal resection surgeries, stratified by CRP enrollment, open versus minimally invasive surgical approach, and surgeries performed by colorectal fellowship trained versus general surgeons.

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Results

A total of 219 patients underwent elective colorectal surgery at our institution from April 2015 to March 2016. Baseline characteristics did not differ in terms of age, gender, comorbidities, primary diagnosis, smoking status and BMI in patients who were enrolled in the CRP versus those that were not (all $p > 0.05$). Among 104 patients who underwent minimally invasive surgery, 59 patients were enrolled in CRP. Of the 115 patients who underwent open colorectal surgery, 54 patients were enrolled in CRP. Overall, a 1.3-day reduction in length of stay (LOS) was observed in patients who were enrolled in CRP compared to non-CRP enrolled patients regardless of the surgical approach ($p = 0.001$). Additionally, results indicated patients enrolled in CRP had better functional status at the time of discharge, reflected by increased rates of discharge home ($p = 0.005$), and decreased rates of discharge to SNF ($p = 0.05$). Additionally, lower rates of post-operative infection ($p = 0.037$), 30-day and 90-day readmission ($p = 0.023$ and $p = 0.002$ respectively) were observed.

When stratified by surgical approach, there was about a 2-day reduction in LOS for patients enrolled in CRP undergoing open procedures ($p = 0.003$). There were also statistically significant reductions in post-operative infection, post-operative ileus and 90-day

readmission rate (all with $p < 0.05$). Moreover, there was an observed \$3,000 reduction in the direct cost associated with each admission for patients undergoing open procedures that were enrolled in the CRP ($p = 0.043$). For minimally invasive procedures, more patients were discharged home rather than SNF ($p = 0.029$) and 90-day readmission rates were reduced ($p = 0.047$). When the level of training of the surgeons was investigated, a reduction in LOS was observed for both minimally invasive (11 hrs, $p = 0.02$) and open procedures (1.4 day, $p = 0.010$) performed by colorectal trained surgeons when patients were enrolled in CRP. Significant LOS reduction was observed for open procedures performed by general surgeons that enrolled their patients in CRP (2.8 day, $p = 0.05$)

Conclusions

The implementation of a CRP for patients undergoing colorectal surgery is an effective strategy to improve patient outcomes while simultaneously reducing length of stay and costs associated with admission. The CRP was more effective in open surgical cases, and utility of the CRP was more pronounced for colorectal fellowship trained surgeons. Further analysis of the subtype of the minimally invasive procedures (robotic versus laparoscopic surgery) and the outcome differences by the level of compliance with the protocol will be performed in future investigation.