

Benefits of using an early recovery after anesthesia and surgery pathway in abdominal surgical patients: A Retrospective, Quality-Improvement Study

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BACKGROUND

Standardized perioperative care protocols, such as the Early Recovery after Anesthesia and Surgery (ERAS), have been shown in multinational multicenter cohort studies, prospective randomized control trials, retrospective studies, and meta-analyses to decrease length of hospital stays in patients having colorectal surgery. This protocol is designed to minimize opioids and volatile anesthetics, use multimodal analgesics and regional anesthesia techniques, and encourage early diet and ambulation. While the body of literature has shown that patients recover faster with earlier discharges without increases in complications, there have been limited data regarding improvement in quality of recovery. This study assessed postoperative length of stay and quality of recovery (QOR) after implementation of an Early Recovery after Anesthesia and Surgery (ERAS) pathway in colorectal surgery patients at Johns Hopkins Hospital.

METHODS

This is a single-center, retrospective quality-improvement study of ASA class 1-3 patients undergoing open and laparoscopic abdominal procedures by a single surgeon for the 12-month periods preceding and following implementation of the ERAS protocol (36 patients ERAS, 44 patients non-ERAS). The ERAS Pathway preferentially utilizes pain medications that are not narcotic based. Patient recovery was evaluated by duration of hospital stay (LOS), narcotic requirement (NR), pain scores (PS), and an established QOR assessment tool. Quality of recovery components included mental status, urination, bowel function, respiratory issues, pain other than incisional pain, nausea or vomiting, and severe pain or constant moderate pain. Statistical analyses compared the two groups and a p-value < 0.05 was considered significant.

Table 1: Demographic characteristics across ERAS and non-ERAS groups

| Characteristics | ERAS group | Non-ERAS group | p-value |
|-----------------|---------------|----------------|---------|
| Age | 54.19 ± 15.82 | 54 ± 14.10 | 0.95 |
| Gender | | | |
| Male | 19 | 25 | 0.90 |
| Female | 17 | 19 | 0.89 |
| Weight | 83.06 ± 21.20 | 80.79 ± 21.00 | 0.63 |

Figure 1: Boxplots comparing distribution of a) Duration of Hospitalization (days) between ERAS and non-ERAS group

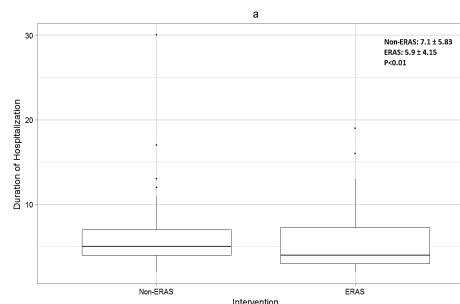
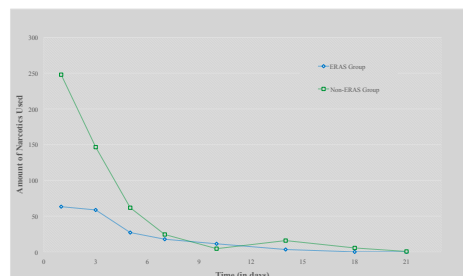


Figure 2: Curve plot between the amount of narcotics used and time for ERAS and Non-ERAS groups



RESULTS

LOS was significantly decreased following the implementation the ERAS protocol (19% reduction, $p = 0.029$). Patients in the ERAS protocol had a lower NR ($p = 0.0002$), and NR was shown to decrease over time in both groups ($p < 0.0001$). Pain scores between the two groups were not significantly different ($p = 0.39$). An increase in PS of one unit was associated with an increased LOS (by 6%, $p < 0.0001$). The QOR metric did not demonstrate a difference between the two groups ($p = 0.52$).

DISCUSSION

Use of an ERAS pathway in colorectal patients at Johns Hopkins Hospital is associated with improvements in metrics of recovery such as LOS, and postoperative NR. There was no significant difference in quality of recovery between ERAS and non-ERAS patients. Our study reinforced previous studies in terms of reduced LOS and NR. While there was no significant difference in QOR between groups, our study was limited in size, and further research should be done with a larger study population. Study populations could also be subdivided into laparoscopic versus open procedures and expanded to multiple surgeons. While there are clearly benefits to ERAS, including decreased LOS and NR, additional studies would help solidify its place in the practice of anesthesia as a pathway for improving quality of recovery in colorectal surgical patients.

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