

Edmonton Experience with an Enhanced Recovery Program: Effect of an Enhanced Recovery after Surgery (ERAS®) Program on the Use of Total Parenteral Nutrition (TPN)

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Background:

Enhanced recovery programs (ERPs) provide a framework for delivery of more consistent and safe care that mitigates some of the common hindrances to a more rapid recovery following surgery. Previous reports have demonstrated a reduction in both length of stay and complication rates following colorectal surgery. We investigated the effect of implementing the Enhanced Recovery After Surgery (ERAS®) program at the Grey Nun's Hospital for patients undergoing elective colorectal procedures. In addition to length of stay and complication outcomes, we investigated the use and duration of Total Parenteral Nutrition (TPN) as a surrogate measure of impaired gastric motility.

Hypothesis:

We hypothesized that implementation of an ERP at the Grey Nuns hospital would result in fewer postoperative complications resulting in a significant decrease in length of stay, complication rates, as well as the initiation and duration of TPN.

Methods:

We conducted a retrospective cohort study of 100 patients undergoing elective colorectal surgery both prior (n=50) and following (n=50) implementation of the Enhanced Recovery after Surgery (ERAS) program in late 2013 and early 2014. Baseline demographic data as well as the primary outcome measures of length of stay, complications and use of Total Parenteral Nutrition (TPN) were compared. In addition, we performed a subgroup analysis for matched procedures along with a regression analysis to determine any factors independently associated with TPN use including anastomotic leak.

Results:

Comparison of baseline characteristics between both the pre-ERAS and post-ERAS cohorts revealed no significant difference in age, gender, BMI category, ASA class, diabetic or smoking status ($P > 0.05$). Implementation of the program resulted in a significant reduction in median length of stay (8 days to 6 days, $P = 0.02$), and overall complication rates (64% to 42% Clavian-Dindo I to IV inclusive, $P = 0.02$). There was a significant reduction in the initiation rates (20% to 8%, $P = 0.04$) and duration (6.5 days; IQR 4 – 20, 6 days; IQR 5 – 7.5, $p = 0.04$) of TPN administration. Anastomotic leak was weakly correlated with TPN initiation ($R^2 = 0.33$, $p = 0.03$).

Conclusions:

The implementation of ERAS at an Edmonton hospital for resulted in significantly fewer complications and a shorter postoperative stay following elective colorectal procedures. Further, this was correlated with a significant reduction in the use of TPN, secondary to improved gastrointestinal motility.