

Introduction of a Pediatric Enhanced Recovery After Surgery Pathway Leads to Decreased Perioperative Opiate Use

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Background: Enhanced Recovery After Surgery (ERAS) Pathways have been widely demonstrated to improve post-surgical outcomes in many adult patient populations, but ERAS for pediatric surgery is under-represented in both the proportion of active pathways utilized by hospitals¹ as well as within the existing body of literature², despite offering many of the same improvements in outcomes^{1,2}. UNC Hospitals has 11 ERAS pathways for adult patients and is beginning to develop ERAS pathways for pediatric surgical patients. We report preliminary data from a new Enhanced Recovery for pediatric surgery pathway for patients undergoing major abdominal surgery for inflammatory bowel disease (IBD).

Methods: A patient group, all pediatric patients undergoing bowel surgery for IBD, was identified to be of potential benefit for an ERAS pathway. This population was chosen due to significant variability in their preoperative, intraoperative, and postoperative management. An ERAS pathway was created by building upon the same structures as existing ERAS pathways at UNC:

- i. A team was created consisting of anesthesiologist and surgeon leads, anesthesia resident, and nursing staff.
- ii. A transitional coping skills booklet was created for adolescents for IBD to help patients cope, recover, and adjust more effectively prior to and after surgery.
- iii. A pathway consisting of pre-, intra-, and post-operative components was created with group collaboration to address dissimilar patient experiences which contribute to inconsistent outcomes.
- iv. Primary (length of stay) and secondary (perioperative opiate use and time to first significant oral intake) outcomes were agreed upon as markers for pathway success.
- v. The pathways were disseminated and made accessible in numerous ways, including an online database, a web-based app, and links to the pathways within Epic.

Results: 16 patients have completed the ERAS pathway for Pediatric IBD. The data of 15 historical patients from identical age and procedural groups was collected during the period directly prior to ERAS implementation for comparison.

Variable	Control (n=15)	ERAS (n=16)	p-value
Age (y)	14.1	12.9	
ASA	3	2.8	
Weight (kg)	47.2	46.2	
Procedure Length (min)	243	177.0	
Hospital LOS (h)	242	176.5	0.218
PACU Pain Score (1-10)	5.6	3.3	0.081
Time to first PO (h)	65.1	39.9	0.080
Periop Morphine Equiv (mg/kg)	0.63	0.27	0.0001
Floor Morphine Equiv (mg/kg)	6.20	1.66	0.017

Conclusions: A statistically significant decrease in intraoperative and postoperative morphine use was observed. Time to first significant oral intake and hospital length of stay were both substantially shortened but have yet to reach statistical significance.

An ERAS pathway for Peds-IBD has demonstrated positive preliminary outcomes. More patients are needed to reach high enough power for the possibility of statistical significance across all outcomes of interest.

Based on initial outcomes, UNC Hospitals will continue to utilize the ERAS pathway for Peds-IBD and will continue to develop ERAS pathways to benefit more groups of pediatric surgery patients.

References:

1. Pearson, K.L. and N.J. Hall, *What is the role of enhanced recovery after surgery in children? A scoping review*. *Pediatr Surg Int*, 2017. **33**(1): p. 43-51.
2. Shinnick, J.K., et al., *Enhancing recovery in pediatric surgery: a review of the literature*. *J Surg Res*, 2016. **202**(1): p. 165-76.