

ERAS Protocol in Pediatric Reconstructive Urology Operations

Research background: Enhanced Recovery After Surgery protocols have not been explored in pediatric urology

The Enhanced Recovery After Surgery (ERAS) Society established guidelines for adult patients recovering from a variety of surgeries.

ERAS goals include:

Maximize pain control

Minimize perioperative metabolic stress

Optimize fluid balance

Decrease convalescence time

In adult patients, the protocols led to decreased length of stay and lower perioperative complication rates without related increases in hospital admissions. While adult surgical patients have benefited from the use of recovery protocols, there have only been a few reports of ERAS protocols being applied to pediatric surgeries, and none in pediatric urology surgeries.

Researchers in the [Department of Pediatric Urology](#) at Children's Hospital Colorado sought to determine if an ERAS protocol would be safe and effective for children undergoing urologic reconstructive surgeries.

26 historical control participants

Research methods: Pediatric reconstructive urology patients were studied using select adult ERAs protocols

The study authors targeted patients under the age of 18 who had a urologic surgery that included a bowel anastomosis (bladder augmentation and/or continent ileo-vesicostomy). Study authors selected 16 adult ERAS protocols to define and implement in enrolled patients spanning the pre-operative, intra-operative and postoperative phases of care.

Preoperative protocols:

Provide preoperative counseling on ERAS protocol and expectations for recovery, pain control and diet

Administer a preoperative clear liquid carbohydrate load

Avoid hyperosmolar bowel preparation; instruct patients on a bowel regimen that should be continued up to the night before surgery

Give guideline-appropriate antibiotics within 60 minutes prior to incision

Intraoperative protocols:

Use regional anesthesia

Avoid excess drains

Maintain euvolemia

No opioids

Minimally invasive assistance

Postoperative protocols:

Avoid postoperative nasogastric (NG) tube on leaving the operating room

Provide nausea and vomiting pharmacologic prophylaxis

Provide early enteral feeding with clear liquid diet on the evening of surgery and regular diet on the day after surgery

Encourage early mobilization

Use non-opioid analgesics

Discontinue maintenance intravenous fluids by postoperative day 2

Avoid oral or intravenous opioids postoperatively

The anesthesia team developed a detailed intra-operative protocol to help maximize adherence. The urology team set a preoperative carbohydrate load and stressed postoperative care plans at the end of the operative note in addition to direct discussions with the team.

Discharge criteria included:

Tolerate oral intake

Have bowel function

Return to baseline mobility

Understand catheter-related instructions from a urology nurse

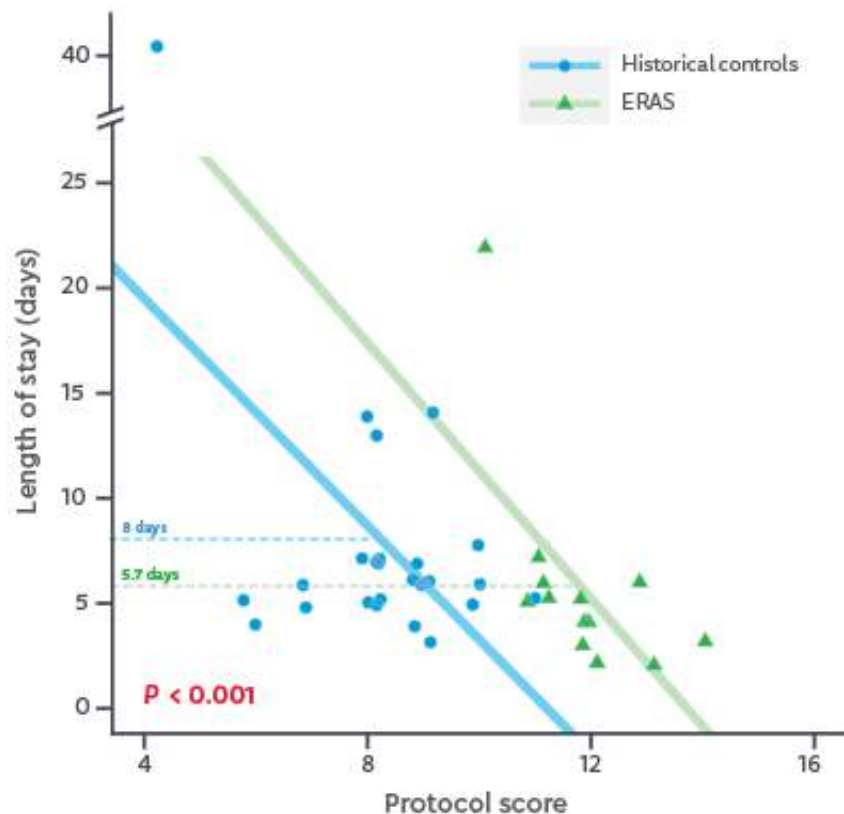
The historical study control group included all pediatric patients in the five years before the implementation of the ERAS protocol who were under the age of 18 and underwent a surgery that included a bowel anastomosis.

Thirteen pediatric patients met the study criteria for inclusion and all participated; 26 patients were included as historical controls after propensity matching occurred.



Research results and discussion: ERAS protocols improved care for pediatric reconstructive urology patients

The median protocol score in the ERAS protocol group was 12/16 versus the median protocol score 8/16 in the historical control group.



Protocol score for historical and ERAS patients plotted against length of stay (LOS). Increased scores were associated with decreased LOS. Solid lines represent linear regression models for each group. The two models were significantly different ($P < 0.001$). ERAS, enhanced recovery after surgery.

In addition, the results included:

- Decrease in LOS from 8 days to 5.7 days
- Improved use of preoperative liquid load
- Intraoperative postoperative opioids were avoided
- Early discontinuation of IVF
- Early feeding
- Decreased 90-day complications from 2.1 to 1.3

Study authors found that the implementation of ERAS improved the consistency of care. The theories of ERAS appeared to drive improvements including maintenance of euvolemia by avoiding

excess fluids, multimodal pain prevention and early feeding.

Research conclusion: ERAS protocols are safe in pediatric reconstructive urology patients, further study needed

Study authors found that ERAS is safe for pediatric patients who undergo reconstructive operations requiring bowel anastomosis. A multicentered study is underway to determine if the cost-effectiveness of postsurgical outcomes improves through the use of ERAS protocols.