

IMPLEMENTATION OF ENHANCED RECOVERY AFTER SURGERY PROTOCOL IN LOOP ILEOSTOMY REVERSAL AT TERTIARY CARE CENTRE IN NORTH BIHAR

Surgery

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ABSTRACT

Background: Loop ileostomy reversal can be challenging, and the Enhanced Recovery After Surgery (ERAS) protocols aim to improve outcomes by minimizing perioperative stress and enhancing recovery. This study assesses the impact of ERAS on patients undergoing loop ileostomy reversal at Darbhanga Medical College and Hospital, North Bihar. **Methods:** This prospective study analyzed 74 patients (30 non-ERAS, 44 ERAS) over 18 months. ERAS protocols included preoperative carbohydrate loading, minimal fasting, balanced intraoperative fluid management, and early postoperative mobilization. Outcomes measured were length of stay (LOS), postoperative pain, and complications such as thromboembolism, infection, and anastomotic leaks. **Results:** The ERAS group had a significantly shorter mean LOS of 3.4 days (SD 0.652) compared to 5.2 days (SD 0.782) in the non-ERAS group ($p < 0.0001$). Postoperative pain was lower in the ERAS group (6.81%) compared to the non-ERAS group (20%). Complications were also reduced, with an overall rate of 13.63% in the ERAS group versus 33.33% in the non-ERAS group. **Conclusion:** ERAS protocols significantly enhance recovery following loop ileostomy reversal by reducing hospital stays, pain, and complications. This supports the integration of ERAS practices in surgical care.

KEYWORDS

ERAS (Enhanced Recovery After Surgery), LOS (Length of Hospital Stay)

INTRODUCTION

Ileostomy is a vital lifesaving procedure with varied global indications. While reversing a loop ileostomy is typically seen as straightforward, it carries significant risks, including morbidity and mortality (1). Enhanced Recovery After Surgery (ERAS) programs, developed by colorectal surgeons, aim to reduce perioperative stress and maintain gastrointestinal balance, ultimately improving recovery after bowel surgeries (2). ERAS has been shown to lower complications, shorten hospital stays, and decrease readmission rates, thus reducing overall morbidity and costs (3).

Enhanced recovery involves interventions like early fluid intake and mobilization within six hours post-surgery to facilitate quicker recovery and discharge. Unlike traditional practices that emphasize bowel preparation and fasting, current guidelines recommend a high carbohydrate intake just before surgery to support postoperative fluid and electrolyte balance (4).

During the intraoperative phase, minimal drug doses are used to enhance recovery and reduce side effects (5,6). Research, including meta-analyses, indicates that ERAS effectively reduces hospital stays and complication rates (7,8). For instance, one study reported a 76.2% success rate for ERAS in ileostomy reversal, while a local study found a 70% success rate with no complications, enabling discharge within two days. This study aims to evaluate the effectiveness of the enhanced recovery program in patients undergoing loop ileostomy reversal.

MATERIAL AND METHODS

Study Design: This prospective longitudinal study included patient for 18 months- 1st March 2023 to 31st August 2024 from the Surgery Department of Darbhanga Medical College and Hospital, Darbhanga, Bihar. This study was conducted after approval from the Ethical Committee of the Institute. Patients' consents were taken before data collection and proper statistical analysis was done.

Inclusion Criteria:

- It included patients aged 20 to 50 years of either gender, who were scheduled for loop ileostomy reversal.

Exclusion Criteria:

- Patient who has not given consent
- Patients with infection at the ileostomy site, granulomatous disease, inflammatory bowel disease.

- Patient with diabetes, or anemia, thyroid and cardiac disorders, Copd.
- Patients with incomplete datasets
- Patients who underwent additional intraperitoneal procedure during ileostomy.

Methodology

From March 1, 2023, to August 31, 2024, 100 patients who underwent ileostomy closure were analyzed. After applying exclusion criteria, 74 patients were randomly assigned to an Enhanced Recovery After Surgery (ERAS) group or a non-ERAS group, which received traditional treatment.

Surgeons chose the surgical approach, with hand-sewn techniques used for anastomosis. The ERAS protocol began preoperatively, including counseling on expected length of stay, fasting guidelines, carbohydrate loading, pain control, early ambulation, and dietary instructions. Patients could eat solid foods until midnight before surgery and were provided an 800 ml carbohydrate-rich drink at bedtime and 400 ml up to 2-3 hours before surgery (9).

Intraoperatively, maintenance fluids consisted of balanced salt solutions at 1-2 ml/kg/hr, with acute blood loss replaced by colloids at a 1:1 ratio. Prophylactic drains and nasogastric tubes were avoided. Postoperatively, patients engaged in early mobilization and received fluids at 75 ml/hr. They were offered clear fluids two hours after surgery, with a regular diet starting on postoperative day one.

Discharge readiness was based on effective pain management, dietary tolerance, normal bowel function, and absence of complications. Primary outcomes assessed included length of stay (LOS) and postoperative complications.

Discharge Criteria: When all 5 criteria were met, patient were considered ready for discharge (10)

Criteria's	End points to determine criteria
Adequate pain control with oral analgesics	Patient able to mobilize and rest without significant pain (pain score of <4 on scale of 0 to 10) on oral analgesics.
Ability to mobilize and self-care	Patient able to sit, walk and perform daily activities.

Tolerance of oral intake	Patient drinks liquid actively without iv fluids and tolerate at least 1 solid meal without nausea, vomiting, bloating or worsening of abdominal pain.
Recovery of lower GI functions	Patient passes flatus
Clinical examination and lab tests show no evidence of complications	Patient with normal temp, pulse, B.P, R.R and serum HB concentration within acceptable level. Patient can empty bladder without difficulty.

Data were entered and analyzed using SPSS version 20. Quantitative variables like age were expressed as mean $\pm$ standard deviation, while qualitative variables such as gender and success rates were presented as frequencies and percentages. The data were stratified by age, gender, and the duration between ileostomy and its reversal.

RESULTS:

Out of 100 initially evaluated patients, 74 were analyzed after excluding 26 for incomplete data, 4 from the ERAS group, and 18 from the non-ERAS group. Four patients were excluded due to unrelated concurrent intraperitoneal surgeries. Ultimately, 30 patients were in the non-ERAS group and 44 in the ERAS group. Patients age and gender distribution were depicted in Table 1 and 2.

Table 1: Gender Distribution In Both Eras And Non-eras Group

GENDER	ERAS	NON-ERAS
MALE	34	24
FEMALE	10	6
TOTAL	44	30

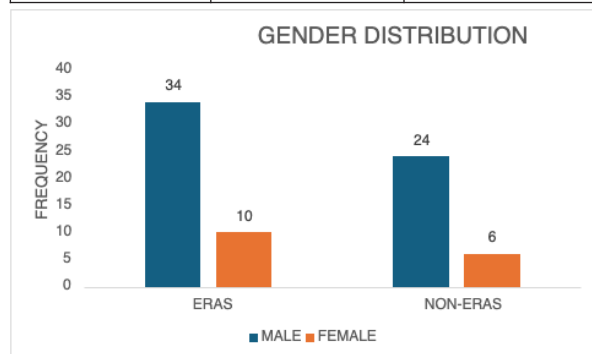
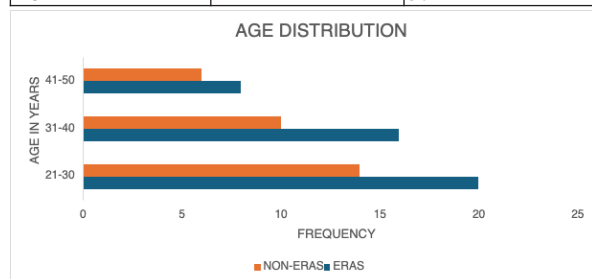


Table 2: Age Distribution In Both Eras And Non-eras Group

AGE IN YEARS	ERAS	NON-ERAS
21-30	20	14
31-40	16	10
41-50	8	6
TOTAL	44	30



Following ileostomy closure, patients underwent daily clinical, biochemical, and physical assessments for complications. In our study, postoperative pain was reported in 3 of 44 patients in the ERAS group, compared to 6 of 30 patients in the non-ERAS group.

Table 3: Post Operative Pain After Ileostomy Closure In Both Groups

	ERAS		NON-ERAS	
	FREQUENCY	PERCENTAGE	FREQUENCY	PERCENTAGE
PRESENT	3	6.81%	6	20%
NIL	41	93.19%	24	80%
TOTAL	44	100	30	100%

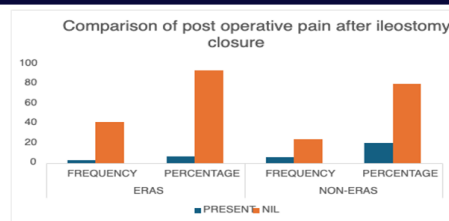


Table 4 compares complications between the ERAS and non-ERAS groups, showing an overall complication rate of 13.63% in the ERAS group versus 33.33% in the non-ERAS group. The wound infection rate in the ERAS group was 6.81%, similar to other studies reporting 7%.

Table4: Comparison Of Various Complications In Both The Eras And Non-eras Group

COMPLICATIONS	ERAS		NON-ERAS	
	FREQUENCY	PERCENTAGE	FREQUENCY	PERCENTAGE
THROMBOEMBOLIC EVENTS	NIL	NIL	1	3.33%
CHEST INFECTION	1	2.27%	2	6.66%
WOUND INFECTION	3	6.81%	4	13.32%
ANASTOMOTIC LEAKS	1	2.27%	2	6.66%
SEPSIS	1	2.27%	1	3.33%
TOTAL	6	13.63%	10	33.33%
OVERALL	44	100	30	100

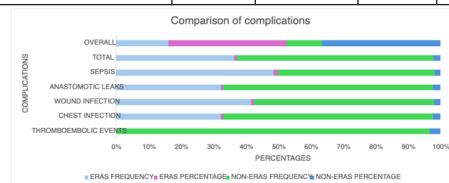


Table 5: Comparative Analysis Of Two Group

	MEAN	S.D	SAMPLE SIZE
ERAS	3.4 days	0.652	44
NON-ERAS	5.2 days	0.782	30

The p-value is very close to 0 ($p < 0.0001$), which suggests that the difference in the length of hospital stay between the ERAS and non-ERAS groups is statistically significant.

DISCUSSION:

Enhanced Recovery after Surgery (ERAS) involves strategies like early fluid intake and mobilization within six hours post-surgery to promote quicker recovery and discharge. Recent studies indicate that a carbohydrate-rich preoperative diet can enhance surgical outcomes by reducing the catabolic response and improving insulin resistance, challenging the necessity of a strict nothing-by-mouth policy and mechanical bowel preparation (11).

In this study, wound infection was the most common complication, with an overall mean hospital stay of 3.4 days and a preoperative stay of less than 24 hours. Enhanced Recovery Programs (ERPs) emphasize preventing catabolism, maintaining fluid and electrolyte balance, minimizing opioid use, and implementing targeted intraoperative fluid therapy. Key components of ERPs also include early mobilization, shorter hospital stays, and higher patient satisfaction, all of which were similarly observed in the current study.

CONCLUSION:

The Enhanced Recovery Program (ERP) is a novel concept in surgical practice designed to enhance patient satisfaction, reduce hospital stays, lower complication rates, and improve cost-effectiveness. In this study, ERP was found to be effective following ileostomy reversal.

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