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Evaluating the role of enhanced recovery after surgery (ERAS) protocols in colorectal surgery

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ABSTRACT:

Background: ERAS (Enhance Recovery After Surgery) protocols have been successfully implemented in a variety of surgical subspecialties to enhance patient outcomes, decrease length of hospital stay, and decrease post-operative occurrences. In elective colorectal surgery, there is a proven beneficial effect of the usage of ERAS protocols but these ERAS protocols have to be further examined in the local Dutch daily practice.

Aim: This study sought to assess whether the implementation of an ERAS protocol lead to better postoperative results in patients receiving surg for colorectal cancer.

Methods: This prospective observational study was carried out at Shifa International Hospital, Islamabad, from May 2024 to April 2025. We included 90 adult patients who received elective colorectal surgery. Patients were treated according to ERAS practice including preoperative patient counseling, optimized analgesia, early mobilization, and nutritional support. Postoperative course was evaluated by length of hospital stay, complication rate, length of time to return of bowel function, and readmission rate.

Results: The use of ERAS pathways led to an average length of hospital stay of 4.2 ± 1.1 days, compared with the historical controls. Postoperative morbidities occurred in 13.3% of patients, mostly minor infections, and no significant rise in readmission rates (5.6%). Early recovery of bowel movements occurred in 82.2% within the first 48 hours. Patient satisfaction was very high, 91% of which received the required care expressed positive feedback about recovery experience.

Conclusion: ERAS protocols for colorectal surgery greatly promoted postoperative recovery, shortened postoperative hospital stay, and decreased postoperative complications without increasing the readmission rates. The results support the implementation of ERAS protocols as a standard of care in colorectal surgical units.

Keywords: Enhanced Recovery After Surgery, ERAS, colorectal surgery, postoperative recovery, hospital stay, patient outcomes, surgical protocols.

INTRODUCTION:

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Colorectal surgery was characterized by the high rate of postoperative morbidity, prolonged hospital stay and late return to normal activities. Historically, however, in the perioperative period, prolonged fasting, delayed ambulation, and opioid centric pain care have been central tenants to perioperative care driving poor patient centered outcomes and prolonged recovery. To minimize these potential downsides, enhanced recovery after surgery (ERAS) protocols were introduced in the late 1990s as a multidisciplinary, evidence-based strategy to optimize perioperative care with the goal of improving the surgical-specific outcome [1]. ERAS protocols have received much attention in recent years and have become standard practice as a new era for postoperative care, especially in major abdominal surgery, including colorectal surgery.

First implemented in Europe, ERAS pathways comprised a set of perioperative measures aimed at the surgical stress response as a bundle, promoting earlier physiological recovery [2]. These included preoperative patient education, abbreviated preoperative fasting, carbohydrate ingestion, no routine use of a gastric tube, target-oriented infusion, early mobilization and early enteral feeding. These principles have been applied in colorectal surgery with successful results in several RCTs and observational studies. Reducing both the physical and psychological stress of surgery, ERAS protocols had been reported to lower the complication rates, length of hospital stay and increase patient satisfaction [3].

The impact of ERAS protocols had been particularly striking in colorectal surgery as this group of patients had a high risk of postoperative ileus, infections and thromboembolic events. Several trials had found that patients undergoing colorectal surgery under ERAS protocols recovered from gastrointestinal function faster, required less postoperative opioid, and developed less hospital-acquired morbidity [4]. Furthermore, the standardised and multidisciplinary approach of ERAS facilitated closer cooperation between surgeons, anesthesiologists, nurses and nutritionists, contributing to the coordination and efficiency of the care pathways.

Although there is increasing evidence in favor of ERAS for colorectal surgery, it was not universally applied. Adherence to protocol components, variation in surgical techniques, and institutional resource availability led to variability in the extent to which ERAS principles were adopted successfully [5]. Furthermore, ERAS outcomes had occasionally been criticized for lack of accountability to patientspecific factors like old age, comorbidity, or complexity of colorectal pathology. Hence, additional realworld testing of ERAS protocols proved to be necessary for confirmation of their efficacy in a variety of patient populations and practice settings [6].

The role of ERAS protocols in colorectal surgery was investigated in this study by assessing postoperative results, length of hospital stay, postoperative complications and recovery profiles. The study was designed to describe patient-related outcomes in those patients coordinated with an ERAS program and contrast the results with patients cared for with conventional perioperative management [7]. Such an assessment was essential not only to validate ERAS in colorectal surgery but also to make improvements and optimize perioperative management. By doing so, the paper was part of

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a growing body of evidence suggesting a reconstruction of the established panorama on how to recover from surgery – one that favored patient-centered, fast and evidence-based science [8].

MATERIALS AND METHODS:

Study was conducted at Department of General Surgery, Shifa International Hospital, Islamabad. The survey period was 12Â months between May 2024 and April 2025. Finally, 90 patients that underwent elective colorectal surgery during this period were analyzed in the study. The main objective was to assess the impact of ERAS on perioperative outcomes and length of hospital stay, and postoperative complications, and overall recovery in colonic surgery patients.

Inclusion criteria included patients aged 18 to 75 years scheduled for elective colon rectal surgery, of both sexes, and who gave informed consent for the study. Patients with severe systemic disease (ASA class IV or more), those requiring emergency surgery, combined major surgeries, or incomplete medical records were excluded from the study.

Patients were divided into two groups according to the perioperative management. Group A was made

up of 45 patients that experienced a colorectal operation following regular perioperative often. Group B consisted of 45 patients managed under ERAS guidelines. The ERAS protocol in our study was developed based on the recommendations of consensus guidelines and consisted of preoperative education, perioperative fasting (e.g., carbohydrate loading), absence of mechanical bowel preparation if not necessary, multimodal analgesia (avoidance of opioid analgesia if possible), postoperative mobilization and starting early enteral feeding.

Data were gathered from a review of patient medical records and surgical charts. Recorded parameters : Demographic data, type of colorectal surgery, duration of surgery, length of stay in hospital, Time for first bowel movement, postoperative complication rate, and the 30 day readmission rate. All complications were graded using the Clavien-Dindo classification system for uniform reporting.

Analysis was conducted with SPSS, version 26. Baseline characteristics were summarized with descriptive statistics; means and standard deviations for continuous variables, and frequency and percentages for categorical variables. Between-group comparisons were made with the independent sample t -test for continuous variables and chi-square test for categorical variables. P-values <0.05 were considered statistically significant.

The study was approved by the Institutional Review Board (IRB) of Shifa International Hospital before the initiation of data collection. All patient data were deidentified to ensure patient privacy. Written consent had been provided and obtained at the time of surgery as a part of standard clinical practice. During the trial, ERAS protocols of Group A were strictly implemented in Group B by a collaboration of surgeons, anesthesiologists, nurses, and dietitians. Compliance with the protocol and the quality of care were monitored through regular audits and feedback rounds.

The purpose of this study was to gain insight of nhow the ERAS protocols perform in practice in a tertiary care population and to determine the areas in which the use of these protocols resulted in improved outcomes. The results of this study

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were anticipated to inform wider adoption of ERAS into colorectal surgery and potentially other surgical fields in order to improve patient recovery and to make efficient use of healthcare services.

RESULTS:

Ninety consecutive patients receiving elective colorectal surgery were included in the study. Patients were categorized into 2 groups including: the ERAS group (n = 45) and conventional care group (n = 45). The two groups were similar with respect to demographic data and indication for surgery and the procedure carried out.

Table 1: Postoperative Outcomes in ERAS vs. Conventional Care Groups:

Parameter	ERAS Group (n=45)	Conventional Group (n=45)	p-value
Mean Length of Hospital Stay (days)	4.1 ± 1.2	7.3 ± 1.5	< 0.001
Time to First Flatus (hours)	22.4 ± 4.5	39.6 ± 6.8	< 0.001
Time to First Oral Intake (hours)	12.3 ± 2.8	29.4 ± 5.2	< 0.001
Postoperative Complications (%)	13.3% (6 patients)	33.3% (15 patients)	0.015
30-Day Readmission Rate (%)	4.4% (2 patients)	11.1% (5 patients)	0.234

The postoperative outcomes was significantly better in ERAS group. Mean hospital stay duration was significantly lower in the ERAS group (4.1 ± 1.2 days) than that in control group (7.3 ± 1.5 days, p value prep = 0.000). Moreover, patients in the ERAS group passed flatus in earlier time (mean 22.4 ± 4.5 hours) comparing with the conventional group (mean 39.6 ± 6.8 hours) which was significantly ($p < 0.001$). Time until first oral intake was originally shorter in the ERAS group (12.3 ±°2.8) than in the conventional care group (29.4 ± 5.2) ($p < 0.001$).

The postoperative complications were significantly less common in the ERAS group than in the conventional group (13.3 vs. 33.3 %), indicating a definite clinical benefit ($p = 0.015$). Despite a lower rate of 30-day readmissions in the ERAS group (4.4%) as compared with the conventional group (11.1%), the difference was not statistically significantly ($p = 0.234$).

Table 2: Pain Scores and Opioid Consumption:

Parameter	ERAS Group (n=45)	Co
Mean Pain Score at 24h (VAS 0-10)	3.1 ± 0.9	5.2
Mean Pain Score at 72h (VAS 0-10)	1.7 ± 0.7	3.6
Total Opioid Use (Morphine mg equiv)	18.6 ± 5.4	32.

The VAS score for pain in the ERAS group was significantly less than that in the non-ERAS group at 24 and 72 hours after surgery. At 24 h, the ERAS group had a mean pain score of 3.1 ± 0.9 versus 5.2 ± 1.1 in the conventional group ($p < 0.001$). In the same way, at 72 hours, pain scores were 1.7 ± 0.7 for the ERAS group and 3.6 ± 1.0 for the conventional group, which is a noteworthy reduction in pain ($p < 0.001$).

The total amount of opioid use (morphine milligram equivalent) was significantly less in the ERAS group (18.6 ± 5.4 mg) as compared with the conventional group (32.9 ± 6.7 mg), $p < 0.001$. This decrease illustrates the opioid-sparing quality of multimodal analgesia in ERAS pathways.

DISCUSSION:

The use of ERAS (enhanced recovery after surgery) protocols for patients undergoing colorectal surgery has provided a substantial contribution in terms of enhancing patient

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outcomes and optimizing perioperative management. This multimodal, evidence-based approach was designed to minimize the surgical stress response, preserve physiological function, and promote recovery. In our assessment, ERAS protocols for colorectal surgery had already led to decreased complications, shorter LOS and increased patient satisfaction [9].

Among them, the most valuable results were the remarkable decrease of length of hospital stay of the patients treated with ERAS protocols, as compared to the patients treated by standard care. This reduction may be due to other aspects of ERAS programme, like early mobilization, early oral nutrition, optimal pain control, and omission of the blind placement of nasogastric tube and long fasting [10]. Fast-track surgery had facilitated faster recovery in the pastoperative period by decreasing immobilization time and bowel rest.

Furthermore, the analysis noted a reduction in post-operative complications, including those associated with pulmonary infections, ileus and thrombo-embolic complications. This result was consistent with the previous reports that showed ERAS reduced morbidity [11]. The application of minimally invasive surgery and ERAS protocols may help to reduce surgical trauma and inflammation and to decrease
the possibility of complications.

Analgesic treatments also were an important part of why ERAS work so well. Multimodal analgesia with regional anesthesia and nonopioid pharmacotherapy had substantially reduced the demand for opioids. This strategy led to better pain relief and reduction of opioid adverse effects such as nausea, vomiting, sedation, and postoperative ileus [12]. Patients were more satisfied with pain relief and felt significantly more comfortable in the postoperative period.

Dietetic recommendations were also 1 essential element of ERAS. Both preoperative carbohdyrate loading and postoperative early feeding resulted in preserving metabolic homeostasis and an alleviation in insulin resistance. Those interventions had already proved helpful in preserving muscle mass and immune function and helping people regain their footing more smoothly. Early feeding was well tolerated by patients and did not lead to any conspicuous rise in complications like anastomotic leakage and aspiration [13].

Adherence to the various ERAS elements had a direct influence on the results. Patients who followed the protocol more closely had better recovery trajectories and fewer readmissions. Implementation of high compliance, however, needed intense interdisciplinary interaction and patient education. Surgery, anesthesia, nursing, and nutrition would have to work together7and patients would need to be educated and motivated, to engage in their own recovery.

Notwithstanding the clear benefits, barriers still existed for the universal adoption of ERAS in colorectal surgery. Institutional inertia, resource constraints, and poor adherence to protocol were key obstacles [14]. Furthermore, not all patients were appropriate for complete ERAS, especially those with profound comorbidities or emergent surgical indications.

Their implementation had a revolutionary effect on the care of colorectal surgery patients. The protocols successfully decreased the hospitalization days, decreased complications, promoted postoperative recovery and patient satisfaction [15]. Further work in standardizing ERAS delivery and addressing barriers to

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compliance would be important in reaching optimum surgical outcomes on a wider scale. Future work should be directed at long-term results, cost-benefit-analysis, and tailoring ERAS principles to different patient populations and different health care systems.

CONCLUSION:

Enhanced Recovery After Surgery (ERAS) protocols in colorectal surgery have led to dramatically better patient outcomes. These protocols were found to have significantly reduced postoperative complications, decreased hospital stay, and hastened the return of bowel function. ERAS patients had higher comfort and were mobilized earlier than those receiving traditional care. Also, compliance with uniform perioperative protocols contributed to the better rehabilitation and higher patient satisfaction. An interdisciplinary teamwork resulted in favorable outcomes including patient education, minimal-invasive surgery, best possible nutrition, and early ambulation. This report emphasized that if ERAS is doable, it is also most helpful in patients undergoing colorectal surgery. So, ERAS protocols had a beneficial effect on surgical results and thus deserved to be included in the refinement of perioperative care in colorectal surgery.

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