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Original Research Article

IMPACT OF ENHANCED RECOVERY AFTER SURGERY (ERAS) PROTOCOLS ON POSTOPERATIVE RECOVERY AND HOSPITAL STAY IN COLORECTAL SURGERY

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Abstract: *Classically, colorectal surgery implicates extended hospital stays with a long recovery period and also high postoperative morbidity.* ***Objective:*** *The study's primary purpose is to find the impact of enhanced recovery after surgery (ERAS) protocols on postoperative recovery and hospital stay in colorectal surgery.* ***Methods:*** *This prospective observational study was conducted at Lady Reading Hospital, Medical Teaching Institution (MTI), Khyber Pakhtunkhwa (KPK), from January 2021 to January 2024. Data were collected from 84 patients. Patients aged >18 years and scheduled for elective colorectal surgery were included in the study.* ***Results:*** *Data were collected from 84 patients with a mean age of 52.4 ± 12.6 years. Most patients were male (60%, n=50), and 40% (n=34) were female. The average body mass index (BMI) was 26.8 ± 3.5 kg/m². Of the total, 30% (n=25) had a history of smoking, and 20% (n=17) were diabetic. Time to normal bowel function was faster in the ERAS group (1.8 ± 0.6 days) versus the traditional group (3.5 ± 1.1 days, p=0.001). Similarly, the ERAS group had shorter hospital stays (4.2 ± 1.3 days vs. 7.1 ± 2.2 days, p=0.001) and fewer complications (14.3% vs. 33.3%, p=0.03).* ***Conclusion:*** *It is concluded that Enhanced Recovery After Surgery (ERAS) protocols significantly improve postoperative recovery and reduce hospital stays in colorectal surgery patients.*

Keywords: Colorectal Surgery Enhanced Recovery After Surgery (ERAS) Postoperative Complications, Length of Stay, Bowel Function

Introduction

Enhanced Recovery After Surgery (ERAS) protocols significantly shift how postoperative care is managed, especially in colorectal surgery. Classically, colorectal surgery implicated long hospital stays with a long recovery period and also high postoperative morbidity. They included extended hospital stays, which resulted in bed rest, restricted fluid and food intake, especially during the first postoperative days, and operation for severe postoperative pain using opioids (1). Previously, Such practices were time-worn and yielded adverse effects on most patients' recovery, more extended hospitalization, infection rate, DVT, and other complications that added to the total healthcare expenses (2). These issues led to the creation of the ERAS protocols as a systemic approach and effort to improve patient outcomes by integrating the more proactive and evidence-based medicine approach to the treatment during the preoperative, intraoperative, and postoperative phases. The main idea of ERAS is to use a set of interventions that individually enhance the recovery. When they are utilized, the body's stress response to surgery is reduced (3). This includes improving the diet, minimizing the use of Opium based analgesics, and early parenteral movement. ERAS protocols are the protocols that include all specialties and all periods of the surgical process, starting with the preoperative period and ending with the postoperative period, which makes the management of ERAS protocols more effective in a variety of different aspects of patients' care (4). The first component of ERAS involves the patient's preoperative education, usually done during the preoperative period. Educating patients about what to expect when they are going to be operated on and what will happen after reduces anxiety levels, which are sensitive indicators of patients' post-surgery prognosis (5). Also, prehabilitation crises before surgery, such as training, can improve a patient's state and, therefore, improve the recovery period after the operation. Nutritional optimization, part of carbohydrate loading, is another vital aspect (6). Unlike the standard fasting protocols, the ERAS allows patients to take clear fluids, including carbohydrate-containing fluids, up to two hours from the time of surgery. This practice avoids dehydration and can support the organism's energy during surgery, promoting fast recovery after the operation (7). According to the ERAS guidelines, during the intra-operative phase, minimally invasive surgery like laparoscopic or robotic surgery is recommended rather than open surgery since the latter causes tissue damage that leads to inflammation, increasing the recovery time. Another issue is fluid intake; too much fluid during the operation may cause swelling of the tissues

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and other complications; hence, cordial-balanced fluid intake is favored (8). Another aspect of the process of surgical treatment is the control of pain to minimize the usage of opioids. Opioids are sometimes given as a component of multimodal analgesia. When used together with regional techniques like epidural or nerve blocks, side effects like nausea, vomiting, constipation, and respiratory depression are avoided (9). In the postoperative period, the ERAS protocols necessarily deviate from the conventional practices. It is recommended that patients should get up and start moving after the surgery, probably on the same day as the surgery, to minimize risks such as DVT and pneumonia. It has been proven that early mobilization also favors the rapid return of bowel function, which is crucial in colon surgery (10). Concerning the strategies for patient care, its characteristic features embrace early feeding, which is the opposite of the early eating remission that was popular earlier. It can be established that early feeding can help in the healing process and also help shorten the period that the patient is detained in the hospital. In addition, non-opioid analgesia methods are adopted after the surgery to minimize the chances of opioid adverse effects, patients' comfort, and faster recovery (11). The study's main objective is to find the impact of enhanced recovery after surgery (ERAS) protocols on postoperative recovery and hospital stay in colorectal surgery.

Methods

This prospective observational study was conducted at Lady Reading Hospital, Medical Teaching Institution (MTI), Khyber Pakhtunkhwa (KPK), from January 2021 to January 2024. Data were collected from 84 patients. Patients aged >18 years and scheduled for elective colorectal surgery were included in the study. Patients who had emergency surgery or had major comorbidities that could significantly influence their recovery, such as advanced cardiac or respiratory disease, were excluded from the study. Data were collected at the patient's perioperative care stages, including preoperative, intraoperative, and postoperative phases. Preoperative data collection included patient demographics, nutritional status, and comorbidities. Intraoperative data focused on surgical techniques, anesthesia management, and fluid balance. Postoperative data included time to first mobilization, initiation of oral intake, pain management protocols, and length of hospital stay. The primary outcomes measured were postoperative recovery time, length of hospital stay, and the incidence of postoperative complications. Data were analyzed using SPSS v26. Descriptive statistics were used to summarize demographic data, while inferential statistics were used to assess the significance of differences in recovery outcomes.

Results

Data were collected from 84 patients with a mean age of 52.4 ± 12.6 years. Most patients were male (60%, n=50), and 40% (n=34) were female. The average body mass index (BMI) was 26.8 ± 3.5 kg/m². Of the total, 30% (n=25) had a history of smoking, and 20% (n=17) were diabetic. (Table 1)

Table 1: Demographic data of patients

Variable	ERAS Group (n=42)	Traditional Group (n=42)
Age (years)	51.9 ± 11.8	52.8 ± 13.2
Male, n (%)	26 (61.9%)	24 (57.1%)
BMI (kg/m²)	26.4 ± 3.2	27.1 ± 3.7
Smoking history, n (%)	12 (28.6%)	13 (30.9%)
Diabetes, n (%)	9 (21.4%)	8 (19%)

Time to normal bowel function was faster in the ERAS group (1.8 ± 0.6 days) versus the traditional group (3.5 ± 1.1 days, p=0.001). Similarly, the ERAS group had shorter hospital stays (4.2 ± 1.3 days vs. 7.1 ± 2.2 days, p=0.001) and fewer complications (14.3% vs. 33.3%, p=0.03). Additionally, opioid use beyond day 1 was significantly lower in the ERAS group (25% vs. 60%, p=0.001), and patient satisfaction was notably higher (90% vs. 67%, p=0.02). (Table 2). The table compares postoperative outcomes between the ERAS (Enhanced Recovery After Surgery) and the traditional groups, each with 42 patients. The ERAS group had significantly faster recovery milestones, including earlier mobilization (6.5 vs. 18.2 hours, p=0.001), quicker time to first oral intake (10.8 vs. 24.5 hours, p=0.001), and shorter time to first bowel movement (1.8 vs. 3.5 days, p=0.001). The ERAS group also had a shorter hospital stay (4.2 vs. 7.1 days, p=0.001) and fewer postoperative complications (14.3% vs. 33.3%, p=0.03), though the difference in readmission rates was not statistically significant (4.8% vs. 16.7%, p=0.09). (Table 3)

Table 2: Outcome measures

Outcome	ERAS Group (n=42)	Traditional Group (n=42)	p-value
Time to normal bowel function (days)	1.8 ± 0.6	3.5 ± 1.1	0.001
Length of hospital stay (days)	4.2 ± 1.3	7.1 ± 2.2	0.001
Complications, n (%)	6 (14.3%)	14 (33.3%)	0.03
Opioid use beyond day 1, n (%)	10 (25%)	25 (60%)	0.001
Patient satisfaction, n (%)	38 (90%)	28 (67%)	0.02

Table 3: Comparison of Postoperative Outcomes between ERAS and Traditional Recovery Groups

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Postoperative Outcome	ERAS Group (n=42)	Traditional Group (n=42)	p-value
Time to mobilization (hours)	6.5 ± 2.1	18.2 ± 3.6	0.001
Time to first oral intake (hours)	10.8 ± 3.4	24.5 ± 5.2	0.001
Time to first bowel movement (days)	1.8 ± 0.6	3.5 ± 1.1	0.001
Length of hospital stay (days)	4.2 ± 1.3	7.1 ± 2.2	0.001
Postoperative complications, n (%)	6 (14.3%)	14 (33.3%)	0.03
Readmission rate (within 30 days), n (%)	2 (4.8%)	7 (16.7%)	0.09

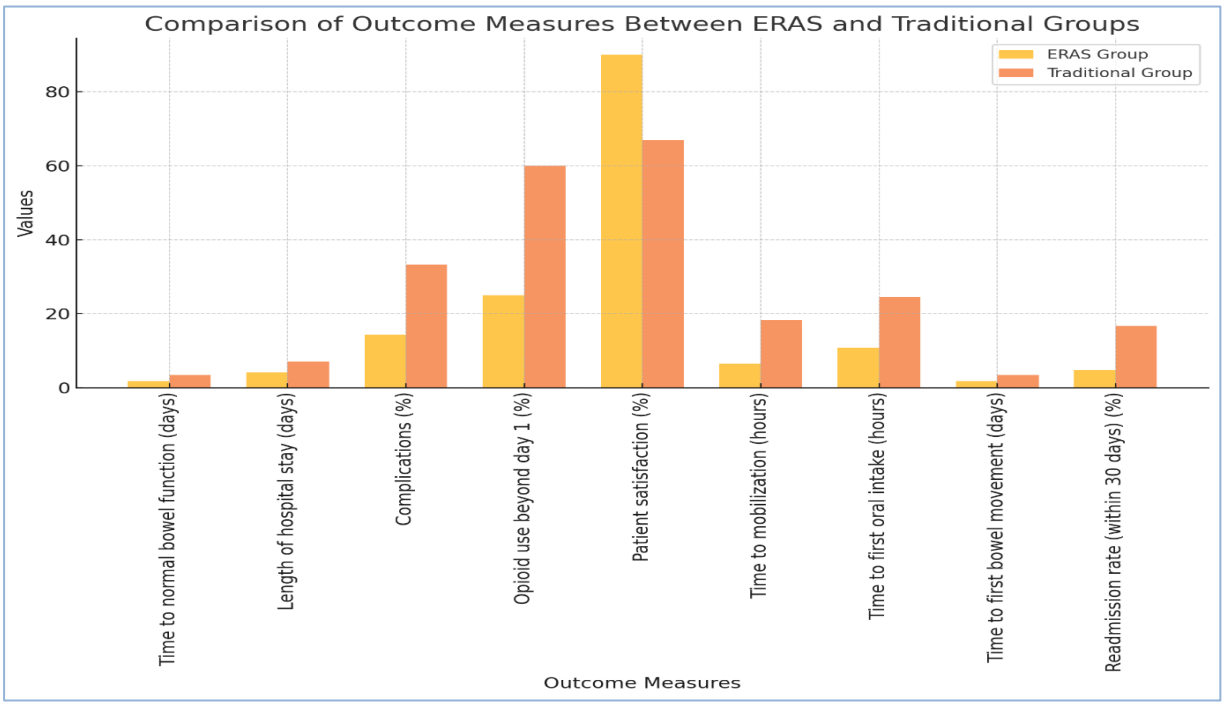

Figure 01 shows the comparison of the ERAS group and the traditional group in terms of outcomes

Discussion

The findings from this study strongly suggest that implementing Enhanced Recovery After Surgery (ERAS) protocols significantly improves postoperative recovery in patients undergoing colorectal surgery. The ERAS group fared comparably to the control group, but resumed mobility at a faster pace, regained bowel movement sooner, and had less number of days in the hospital (12). Such outcomes corroborate a rapidly expanding trend in the role of ERAS protocols as the shift in the model of care is most effective in managing patients undergoing colorectal surgery. More specifically, one of the key findings in this study was that patients in the ERAS group stayed in the hospital for a shorter duration. Patients who were admitted under the ERAS program spent an average of 4 days in the hospital. Two days as compared to a week in the normal experimental group (13). The participants spent an average of 1 day in the traditional recovery group. This reduction not only enhances the experience of patients to reduce the level of inconvenience that they can experience but also reduces the burden placed on these health care facilities to attend to a variety of patients' needs. In healthcare delivery, most especially within countries, regions, or healthcare systems where there is high demand for healthcare facility beds, shortening hospital stays is one of the objectives (14). The decreased postoperative complication rate in the ERAS group was 14. 3% and the traditional group at 33. 3% provided an added strength to this protocol. Contamination and other postoperative setbacks can ensue and cause delays in the recovery period, resulting in high costs. This reduces the risks associated with surgeries; hence; ERAS protocols on early mobilization, nutritional support, and non-opioid pain management minimize the body's stress response to surgery (15). This agrees with other works, which have identified that the percentage of postoperative complications following colorectal surgery has been reduced by up to 50% by implementing ERAS protocols. ERAS plan guidelines also evidenced greater efficiency in pain management compared to the traditional ways. Concerning opioid consumption, the ERAS group had a comparatively low rate of opioid use. The group used opioids beyond the postoperative day one, whereby only twenty percent of the group had opioids compared to the traditional group, which had Sixty percent of opioids (16). This is a significant finding given the fact that there is an increased concern about opioid dependency and its consequences in the global market. In addition to improving patient satisfaction, since ERAS avoids the use of opioids through the use of multimodal pain management techniques, it has been deemed to tackle public health issues relating to opioid dependence (17). In addition, the level of satisfaction of patients: in the ERAS group, 90 percent described their experience as excellent or very good

compared with 67 percent of the traditional group. This difference could result from early recovery, reduced complications, and management of pain hence improving the patient's satisfaction (18). High levels of patient satisfaction are significant in enhancing increased patient compliance and health outcomes. Nevertheless, there are barriers to the general use of ERAS protocols despite their evident effectiveness. Therefore, Multidisciplinary teamwork is essential to foster to ensure all aspects are controlled and coordinated by surgeons, anesthetists, nurses, dietitians and physiotherapists, and other health care professionals (19). Therefore, the team must be fully trained and completely on board in terms of adhering to the ERAS pathway to achieve the best results. Moreover, patient compliance is essential, especially in the first months after the surgery when pain or disapproval to move can slow down the healing process. These barriers need to be addressed adequately by providing enough education and support to the patients (20). A small sample, in this case, only enrolled 84 patients, may be one of the drawbacks in achieving a more general conclusion that could be arrived at from a study with a larger sample size. These results align with earlier research, and these findings would gain further strength from a multicenter trial. Moreover, this paper was done in one hospital, which could have different institutional practices from other hospitals, leading to biased results.

Conclusion

It is concluded that Enhanced Recovery After Surgery (ERAS) protocols significantly improve postoperative recovery and reduce hospital stays in colorectal surgery patients. By encouraging early mobilization, minimizing opioid use, and optimizing perioperative care, ERAS leads to fewer complications and higher patient satisfaction.

Declarations

Data Availability statement
All data generated or analyzed during the study are included in the manuscript.
Ethics approval and consent to participate
Approved by the department concerned. (IRBEC-TCIS-230/23)
Consent for publication
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Conflict of interest

The authors declared the absence of a conflict of interest.

Author Contribution

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