

Research Article

Evaluation of the Effectiveness of Enhanced Recovery after Surgery (ERAS) Protocols in Reducing Postoperative Morbidity in Major Abdominal Surgery

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ABSTRACT

Background: Enhanced Recovery after Surgery (ERAS) guidelines represent evidence-based methods of perioperative care aimed at alleviating surgical stress, preserving physiological functions, and speeding up the recovery process. Their use in major abdominal surgery has been linked with better outcomes in postoperative outcomes, but their efficacy in the reduction of morbidity is a subject of continuing review.

Place and Duration of Study: This research was carried out in Department of General Surgery and Anesthesia, Sindh Institute of Urology and Transplantation (SIUT) from January 2025 to June 2025.

Objective: To assess how well the ERAS protocols help to reduce postoperative morbidity in patients undergoing major abdominal surgery.

Methodology: The study was done on 150 patients who were undergoing major abdominal surgery; they were divided into two groups; ERAS (n=75) and conventional care (n=75). WHO sample size calculator was used to determine the sample size. Both male and female patients aged 18-70 years were included. A structured proforma was used to collect data which included demographics, clinical parameters, type of surgery and postoperative outcomes. ERAS group was given uniform perioperative treatment including preoperative counseling, optimized nutrition, carbohydrate loading, minimum fasting, early mobilization, early drain and catheter removal and oral feeding commenced within 24 hours. The standard group was given standard postoperative care. Postoperative complications (surgical site infections, pulmonary complications, and postoperative ileus) and length of hospital stay were used as primary and secondary outcomes, respectively. Data were processed with the help of SPSS 25.0 and chi-square, and t-tests were used with p 0.05 being significant.

Results: Patients treated according to ERAS guidelines showed a great decrease in morbidity in the postoperative period in comparison to the control group. Surgical site infections, pulmonary complications, as well as postoperative ileus were less common in the ERAS group. Moreover, the ERAS patients were also characterized by a shorter length of stay and quicker recovery.

Conclusion: ERAS guidelines can be used to minimize the postoperative morbidity of major abdominal surgery patients. They can be implemented to achieve better clinical outcomes, fewer complications, and reduced hospital stays, which is why they are a worthy tool in contemporary surgical practice.

Keywords: ERAS, Postoperative Morbidity, Abdominal Surgery, Surgical Site Infection, Early Recovery, Perioperative Care, Hospital Stay, Patient Outcomes.

INTRODUCTION

Postoperative morbidity, longer hospitalization, and slower healing can be linked to major abdominal surgery as it is characterized by the physiological stress response that leads to

these conditions 1. Conventional methods of perioperative care, including long-term starvation, late mobilization, extensive use of drains and tubes, can cause more complications, including surgical site infections,

pulmonary complications, and postoperative ileus 2. These problems do not only impact patient outcomes but also create a significant burden on the health care systems, especially when they are resource limited 3.

Over the past few years, the concept of Enhanced Recovery after Surgery (ERAS) has become a groundbreaking innovation in the field of perioperative care 4. ERAS is an evidence-based, multimodal intervention merging different interventions in the preoperative, intraoperative, and postoperative stages to reduce surgical stress and enhance early recovery 5. Some of the major aspects of ERAS are preoperative counseling, optimized nutrition, minimal invasive surgery, using pain management with reduced opioid intake, early mobilization, and early oral feeding 6. ERAS focuses on improving patient outcomes by standardizing the care pathways, staying safe, and cost-effective 8.

ERAS protocols are highly researched in various surgical specialties, especially in colorectal and other abdominal surgeries which are major. Research has shown that the implementation of ERAS can be linked with a decrease in postoperative complications, decreased length of stay, and hastened normal activity resumption 9. Also, ERAS practices result in an increase in patient satisfaction, which occurs due to active involvement in recovery and minimization of physical and psychological effects of surgery. Although these are the advantages, implementation of ERAS protocols remains uneven within most health care facilities because of issues like lack of awareness, insufficient resources and unwillingness to change the conventional clinical practices.

Moreover, postoperative complications burden in major abdominal surgery remains to be a major concern, particularly in developing nations whereby health facilities are usually limited. Locally relevant evidence should be needed to facilitate the use of ERAS protocols and measure their effectiveness in various clinical settings 10. The results of how ERAS affects postoperative morbidity may be used to make clinical decisions and enhance the quality of patient care 11.

Thus, the purpose of the study is to assess the efficacy of ERAS guidelines in minimizing the morbidity among patients who are subjected to major abdominal surgery. This study aims to offer evidence-based data that can aid the general implementation of ERAS measures and lead to better health outcomes in the operating

room by comparing the results of the two ERAS and traditional care groups 12.

Objective: To determine the effectiveness of Enhanced Recovery After Surgery (ERAS) in preventing postoperative morbidity, such as postoperative surgical site infections, pulmonary complications, and postoperative ileus, and to determine their influence on length of hospital stay among patients who have undergone major abdominal surgery.

METHODOLOGY

This comparative analysis was conducted at Department of General Surgery and Anesthesia, Sindh Institute of Urology and Transplantation (SIUT) from January 2025 to June 2025, and involved 150 patients that were undergoing major abdominal surgery using non-probability consecutive sampling. WHO sample size calculator was used to determine the sample size. Both male and female patients aged 18-70 years with an elective major abdominal surgery planned, and who were either undergoing an emergency surgery or had severe comorbidities or incomplete clinical information were excluded. The study participants were divided into two groups, including ERAS (n=75) and conventional care (n=75). ERAS group was given standardized care perioperative care which consisted of preoperative counseling, carbohydrate loading, minimal fasting, optimal anesthesia, removal of tubes and drains early, mobilization and oral feeding initiation within 24 hours. The control group was provided with traditional hospital care. The structured proforma that was used to gather data consisted of demographics, clinical and postoperative outcomes. The result was mainly postoperative morbidity and secondly, length of hospital stay. The analysis of data was done using SPSS 25.0. The quantitative variables were measured in the form of mean, SD, qualitative variables in terms of frequency, and the statistical comparison was made using chi-square and t-tests ($p \leq 0.05$). All the participants were provided with ethical approval and informed consent.

Inclusion and Exclusion Criteria

Inclusion Criteria: Patients aged 18-70 years of either sex, who had elective major abdominal surgery, were eligible. The study only enrolled those who gave informed consent and had complete clinical records.

Exclusion Criteria: Patients who were on emergency surgeries were ruled out.

Individuals with severe comorbidities (advanced heart or renal disease, metastatic cancer, or immunocompromised condition) were excluded. Also, patients whose data was incomplete or those who were not willing to join the study were not included in the study.

Data Collection: All the enrolled patients were used to collect data using a structured and pre-designed proforma. At admission, baseline demographic data (age, gender and clinical history) were taken. Perioperative information including type and duration of operation, form of anesthesia and intraoperative findings were recorded. Problems during the postoperative period that were recorded to include complications like surgical site infection, pulmonary complications, and postoperative ileus, as well as length of stay. The adherence to the components of the protocols such as early feeding and mobilization was followed up in patients in the ERAS group. The data was gathered using patient records, clinical

examinations, and day-to-day follow-up of patients during hospital stay. Trained personnel were used to record all the information to maintain accuracy and consistency.

RESULTS

The number of patients included was 120, half of them comprising 60 patients each. ERA's group had a very low rate of postoperative complications in contrast with the conventional care group. The ERAS group had less frequency of surgical site infections, pulmonary complications as well as postoperative ileus. Moreover, those patients who were treated using ERAS protocols had faster recovery and mobilization. The average hospital stay was greatly reduced in the ERAS group as opposed to the control group. Altogether, ERAS protocols implementation led to better clinical outcomes and less postoperative morbidity in patients who had undergone major abdominal surgery.

Table 1: Baseline Characteristics of Patients (n = 150)

Variables	ERAS Group (N=75)	Conventional Group (N=75)	P-Value
Age (years, mean ± SD)	45.3 ± 12.1	46.6 ± 11.8	0.52
Gender (Male/Female)	43 / 32	45 / 30	0.72
BMI (kg/m ²)	24.6 ± 3.2	25.2 ± 3.4	0.40
Duration of Surgery (min)	121.0 ± 30.0	126.0 ± 29.0	0.37
Type of Surgery			
– Gastrointestinal	48 (64.0%)	50 (66.7%)	0.72
– Hepatobiliary	27 (36.0%)	25 (33.3%)	

Value is represented as the mean and SD or frequency (percentage). There were no major differences in the baseline (p > 0.05).

Table 2: Postoperative Complications in ERAS and Conventional Groups (n = 150)

Complications	ERAS Group (n=75)	Conventional Group (n=75)	P-Value
Surgical Site Infection	5 (6.7%)	15 (20.0%)	0.03*
Pulmonary Complications	4 (5.3%)	13 (17.3%)	0.04*
Postoperative Ileus	3 (4.0%)	11 (14.7%)	0.02*
Overall Morbidity	12 (16.0%)	39 (52.0%)	<0.01*

Values are frequency (percentage). P < 0.05 is a statistical significance.

Table 3: Length of Hospital Stay in ERAS and Conventional Groups (n = 150)

Group	Mean ± SD (Days)	Range (Days)	P-Value
ERAS Group (n=75)	5.2 ± 1.3	3 – 8	
Conventional Group (n=75)	8.7 ± 2.1	5 – 12	<0.01*

Values are mean ± SD. ERAS patients experienced a large reduction in hospital stay (p < 0.05).

Table 4: Recovery Milestones in ERAS and Conventional Groups (n = 150)

Recovery Indicators	Eras Group (N=75)	Conventional Group (N=75)	P-Value
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Time to First Mobilization (hours)	12.5 ± 3.2	28.8 ± 5.5	<0.01*
Time to First Oral Feeding (hours)	14.8 ± 4.0	36.0 ± 6.2	<0.01*
Time to Bowel Movement (days)	2.1 ± 0.6	4.0 ± 1.0	<0.01*

Values are mean ± SD. The milestones were reached much sooner in ERAS patients.

Table 5: Overall Outcomes in ERAS and Conventional Groups (n = 150)

Outcomes	ERAS Group (N=75)	Conventional Group (N=75)	P-Value
Reduced Postoperative Morbidity	63 (84.0%)	36 (48.0%)	<0.01*
Early Discharge	60 (80.0%)	28 (37.3%)	<0.01*
Patient Satisfaction (Good/Excellent)	62 (82.7%)	35 (46.7%)	<0.01*

The implementation of ERAS brought about great benefits in the general outcome such as lowered morbidity, early discharge and patient satisfaction.

DISCUSSION

The results of the present study show that the Enhanced Recovery After Surgery (ERAS) procedures are effective in reducing postoperative morbidity and enhancing recovery among patients that undergo major abdominal surgery (Shah et al., 2024). In the ERAS group, postoperative complications, including surgical site infections, pulmonary complications, and postoperative ileus were significantly reduced as compared to the conventional care group. This is in line with past studies that have shown that ERAS interventions such as early mobilization, optimal nutrition and multimodal analgesia reduce physiological stress responses and improve immune functioning, which lead to decreased complication rates 13.

Early mobilization and oral feeding, which are some of the important elements of ERAS, were realized much earlier in the ERAS group. This group of patients could ambulate within 12 hours after surgery and could also take up oral intake within 14 hours on average as compared to much longer durations taken by conventional groups 14. Early mobilization enhances pulmonary performance, decreases the likelihood of venous thromboembolism and speeds up gastrointestinal recovery, and early oral feeding preserves gut integrity and minimizes the occurrence of postoperative ileus 15. Such results indicate the benefits of the protocolized perioperative care in comparison to the traditional methods, which tend to be

based on the delayed feeding and immobilization 16.

The average median hospital stay was much lower in the ERAS group, having 5.2 days on average as compared to 8.7 days in the conventional group 17. Not only does shorter hospitalization signify a quicker recovery, but it will also reduce the cost of healthcare and resource consumption, and this is particularly applicable to the healthcare environment with limited resources 18. The fact that the length of stay is reduced in this study is in line with the global data on colorectal and hepatobiliary surgery trials, which highlight the generalizability of the benefits of ERAS in major abdominal surgeries 19.

The overall patient outcomes, such as reduced morbidity, and patient satisfaction, were better in the ERAS group. Improved recovery experiences, less pain, and sooner recovery to daily activities are factors that can also be attributed to higher patient satisfaction. The paper highlights the role of multidisciplinary collaboration, patient education, and following standardized procedures in attaining such outcomes. Although the positive results were obtained, ERAS protocols should be implemented through training and monitoring and supported at the institutional level. Effective adoption may be hampered by barriers like low levels of awareness among healthcare personnel, opposition to change due to the use of traditional practices and lack of resources 20. These issues should be addressed to achieve the full potential of ERAS, especially in developing nations where morbidity of surgery continues to be high.

To sum up, this research offers strong evidence that the ERAS practices have a significant

impact on the reduction of postoperative morbidity, acceleration of the recovery process, and reduction of hospitalization and patient satisfaction in large abdominal surgery. The increased use of ERAS guidelines can also improve surgical outcomes, better the use of resources, and establish a standard of contemporary perioperative care 20.

CONCLUSION

The current paper has indicated that the use of the Enhanced Recovery after Surgery (ERAS) protocols is relevant in enhancing the postoperative outcomes in patients who have undergone major abdominal surgery. Patients treated with the ERAS had significantly reduced postoperative morbidity, in terms of surgical site infections, pulmonary and postoperative ileus, compared to the conventional patients. Early mobilization, oral feeding, and bowel movements were some of the recovery milestones realized earlier, which led to reduced hospital stays and overall recovery. In addition, in the ERAS group, patient satisfaction was better, which indicates better perioperative experiences and quality of care. These results underline the usefulness of a multidisciplinary methodology (structured) used to maximize the outcomes of surgical procedures and reduce complications. The introduction of ERAS practices can boost clinical performance, minimize health care costs, and foster patient centered care. As such, ERAS can be highly recommended as the standard of care in major abdominal surgery.

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