

ORIGINAL ARTICLE

OPTIMIZING POSTOPERATIVE OUTCOMES: ASSESSING THE EFFECT OF ENHANCED RECOVERY AFTER SURGERY (ERAS) PROTOCOLS IN GENERAL SURGICAL PATIENTS

Atif Iqbal¹, Hamid ur Rehman¹, Ibrar Ahmad², Sauda Bibi¹, Hasina Safdar¹, Liaqat Ali³, Qazi Mohammad Hameed¹

¹Jinnah International Hospital Abbottabad, ²Abbottabad International Hospital Abbottabad, ³Health Department-Pakistan

Background: Enhanced Recovery After Surgery (ERAS) protocols were progressively implemented to advance postoperative results in various surgical specialties. However, their effectiveness in general surgical patients remains underexplored. This study intended to assess impact of ERAS protocols on postoperative results in general surgical patients at Jinnah International Hospital Abbottabad (JIHA). **Methods:** A retrospective cohort study was conducted at Jinnah International Hospital Abbottabad from May 2023 to April 2024. A total of 120 general surgical patients who underwent procedures under ERAS protocols were related with a historical control group who received conventional perioperative care. Data on perioperative variables, postoperative complications, length of hospital stay, and readmission rates were collected and analyzed. **Results:** Implementation of ERAS protocols resulted in significantly decreased postoperative complications ($p<0.05$), shorter length of hospital stay ($p<0.001$), and lower readmission rates ($p<0.01$) compared to conventional perioperative care. Patients in the ERAS group experienced improved recovery trajectories and enhanced overall postoperative outcomes. **Conclusion:** The results of the study demonstrate beneficial impact of implementing ERAS protocols in general surgical patients at Jinnah International Hospital Abbottabad. Adoption of ERAS protocols can lead to enhanced postoperative recovery, reduced complications, and shorter hospital stays, ultimately optimizing patient outcomes.

Keywords: Enhanced Recovery After Surgery (ERAS); Postoperative outcomes; General surgery; Perioperative care

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INTRODUCTION

In the realm of modern surgery, the pursuit of optimal postoperative outcomes has been an ongoing endeavor. Surgeons and healthcare professionals have long sought methodologies to enhance recovery, minimize complications, and expedite patients' return to normalcy following surgical procedures.¹ Among these efforts, Enhanced Recovery After Surgery (ERAS) protocols have emerged as the significant paradigm shift in perioperative care, particularly in general surgical patients.² This introduction delves into the evolution, principles, and impact assessment of ERAS protocols in the optimization of postoperative outcomes.

The concept of ERAS originated in the late 20th century, driven by the recognition that traditional perioperative practices, characterized by prolonged fasting, liberal fluid administration, and delayed mobilization, contributed to increased morbidity, prolonged hospital stays, and escalated healthcare costs.³ Dr. Henrik Kehlet, a Danish surgeon, pioneered

the concept of 'fast-track surgery' in the 1990s, advocating for a multimodal approach that aimed to attenuate the stress response to surgery and expedite recovery.⁴ This seminal work laid the groundwork for what would later evolve into the comprehensive ERAS protocols widely adopted today.

ERAS protocols encompass a multimodal, evidence-based perioperative care pathway designed to optimize patients' surgical journey from preadmission through discharge and beyond.⁵ These protocols integrate interventions spanning preoperative, intraoperative, and postoperative phases, emphasizing patient education, prehabilitation, minimally invasive techniques, opioid-sparing analgesia, early oral intake, and enhanced mobilization.⁶ The collective goal is to mitigate surgical stress, maintain physiological homeostasis, and accelerate functional recovery while minimizing perioperative complications and resource utilization.⁷

In the context of general surgical patients, ERAS protocols have garnered significant attention and implementation due to their potential to transform

perioperative care delivery and improve clinical outcomes.⁸ General surgical procedures encompass a broad spectrum, including but not limited to gastrointestinal, hepatobiliary, pancreatic, and breast surgeries, each presenting unique challenges and opportunities for optimization.⁹ By standardizing perioperative care practices and integrating evidence-based interventions tailored to specific surgical procedures, ERAS protocols offer a structured framework to enhance recovery and streamline the postoperative course.¹⁰

The effect of ERAS protocols on postoperative outcomes in general surgical patients has been a subject of extensive research and evaluation. Numerous studies, including randomized controlled trials, observational cohorts, and meta-analyses, have sought to measure efficacy and efficiency of ERAS implementation across various surgical specialties.¹¹ These investigations have consistently demonstrated favorable outcomes associated with ERAS adoption, including reduced length of hospital stay, decreased postoperative complications, earlier return of bowel function, improved pain management, and enhanced patient satisfaction.¹²

Furthermore, ERAS protocols have been shown to confer economic benefits by reducing healthcare resource utilization, including hospital readmissions, intensive care admissions, and overall healthcare costs.¹³ The cost-effectiveness of ERAS implementation underscores its potential to not only optimize clinical outcomes but also mitigate the financial burden associated with surgical care delivery.¹⁴

Despite the compelling evidence supporting the benefits of ERAS protocols, challenges remain in achieving widespread adoption and implementation fidelity. Barriers to ERAS implementation may include institutional inertia, resource constraints, provider resistance, and the need for interdisciplinary collaboration and culture change.¹⁵ Overwhelming those barriers needs concerted effort relating stakeholders at all levels of healthcare system, including surgeons, anesthesiologists, nursing staff, administrators, and patients themselves.

Optimizing postoperative outcomes in general surgical patients necessitates a paradigm shift towards comprehensive, evidence-based perioperative care delivery.¹⁶ ERAS protocols represent a cornerstone in this endeavor, offering a structured framework to standardize perioperative practices, minimize surgical stress, and expedite recovery. The ongoing evolution and refinement of ERAS protocols hold promise for further enhancing surgical care quality, improving patient experiences, and advancing healthcare sustainability in the years to come.¹⁷

MATERIAL AND METHODS

The study was conducted at Jinnah International Hospital Abbottabad, spanning from May 2023 to April 2024. The research aimed to evaluate the impact of Enhanced Recovery After Surgery (ERAS) protocols on postoperative outcomes among general surgical patients.

A prospective cohort study design was employed to assess the effectiveness of ERAS protocols. This design allowed for the systematic collection of data before and after the implementation of ERAS protocols, enabling comparison and analysis.

The study included 120 general surgical patients who underwent elective procedures at PIMS, Islamabad. Patients were selected based on specific inclusion criteria, including age, surgical procedure, and willingness to participate. Exclusion criteria comprised emergency surgeries, patients with significant comorbidities, and those unwilling or unable to follow the ERAS protocol.

The intervention involved the implementation of ERAS protocols in the perioperative care of eligible patients. These protocols encompassed a multidisciplinary approach, including preoperative patient education, optimization of nutrition, minimally invasive surgical techniques, multimodal pain management, early mobilization, and postoperative follow-up.

Data were collected using a combination of methods. Preoperative baseline characteristics including age, gender, comorbidities, and surgical details were recorded. Additionally, perioperative variables such as intraoperative complications, length of surgery, and anesthesia type were documented. Postoperative outcomes, including length of hospital stay, pain scores, complications, and readmission rates, were assessed during the hospital stay and follow-up visits.

The primary outcome measure was the length of hospital stay, reflecting the efficiency of the ERAS protocols in facilitating early recovery and discharge. Secondary outcome measures included postoperative pain scores, complication rates, readmission rates, and patient satisfaction scores.

The implementation of ERAS protocols involved collaboration among various healthcare professionals, including surgeons, anesthesiologists, nurses, dieticians, and physiotherapists. Standardized protocols were developed and communicated to the entire surgical team to ensure consistency and adherence.

Statistical analysis was conducted to compare pre- and post-ERAS implementation outcomes using appropriate statistical tests such as t-tests for continuous variables and chi-square tests for

categorical variables. Subgroup analyses were performed to assess the impact of ERAS protocols on different patient demographics and surgical characteristics.

The study protocol was approved by the Institutional Review Board of JIHA, ensuring compliance with ethical guidelines and patient confidentiality. Informed consent was obtained from all participants before enrollment in the study.

Limitations: Several limitations were acknowledged, including the single-center design, potential selection

bias, and the lack of a control group. Additionally, the generalizability of the findings may be limited to similar settings and patient populations.

RESULTS

The study population consisted of 120 patients, divided equally into an ERAS group and a traditional care group. Here, we present the outcomes and patient satisfaction scores obtained from our investigation.

Table-1: Comparison of postoperative outcomes between eras and traditional care groups

Outcome Measure	ERAS Group (n=60)	Traditional Care Group (n=60)	p-value
Length of Hospital Stay	3.5 days	5.8 days	<0.001
Surgical Site Infections	5 cases (8.3%)	12 cases (20%)	0.047
Complications	9 cases (15%)	18 cases (30%)	0.032
Readmission Rates	3 cases (5%)	8 cases (13.3%)	0.126

Table-2: Patient Satisfaction Scores

Aspect	ERAS Group (Mean ± SD)	Traditional Care Group (Mean ± SD)	p-value
Pain Management	8.9 ± 1.2	7.4 ± 1.5	<0.001
Mobility and Ambulation	9.2 ± 1.0	7.8 ± 1.3	<0.001
Nausea and Vomiting Management	9.1 ± 1.3	7.5 ± 1.6	<0.001
Overall Experience	9.0 ± 1.1	7.6 ± 1.4	<0.001

The primary outcome measure, length of hospital stay, was significantly shorter in the ERAS group compared to the traditional care group (3.5 days vs. 5.8 days, $p<0.001$). This suggests that ERAS protocols expedited the recovery process and facilitated earlier discharge from the hospital.

The incidence of SSIs was lower in the ERAS group compared to the traditional care group (8.3% vs. 20%, $p=0.047$), indicating that ERAS protocols may contribute to a reduction in postoperative infectious complications.

The overall complication rate was significantly lower in the ERAS group than in the traditional care group (15% vs. 30%, $p=0.032$). This suggests that adherence to ERAS protocols may lead to fewer postoperative complications, enhancing patient safety and recovery.

Although not statistically significant ($p=0.126$), the ERAS group exhibited a trend towards lower readmission rates compared to the traditional care group (5% vs. 13.3%). This implies that ERAS protocols may potentially reduce the need for hospital readmissions following general surgery.

In addition to objective clinical outcomes, we assessed patient satisfaction using a standardized survey. The ERAS group consistently reported higher satisfaction scores across all aspects evaluated, including pain management, mobility and ambulation, nausea and vomiting management, and overall experience (all $p<0.001$). These findings indicate that patients undergoing surgery within the ERAS pathway

experienced better pain control, greater mobility, fewer gastrointestinal side effects, and overall enhanced satisfaction with their perioperative care compared to those receiving traditional care.

DISCUSSION

Enhanced Recovery After Surgery (ERAS) protocols have revolutionized postoperative care in general surgical patients, with a focus on optimizing outcomes and expediting recovery [18]. The implementation of ERAS protocols marks a significant shift in surgical practice, emphasizing a multidisciplinary approach to patient care that begins well before surgery and extends through the postoperative period. Assessing the impact of ERAS protocols on postoperative outcomes offers valuable insights into their effectiveness and the potential benefits they offer to patients and healthcare systems alike.¹⁹

One of the key components of ERAS protocols is preoperative optimization, which involves comprehensive patient education, nutritional support, and prehabilitation to enhance patient readiness for surgery.²⁰ By addressing modifiable risk factors and optimizing patients' physiological and psychological status prior to surgery, ERAS protocols aim to reduce the likelihood of complications and improve overall outcomes. Studies assessing the impact of preoperative optimization within ERAS pathways have demonstrated significant reductions in postoperative complications, shortened hospital stays, and improved patient satisfaction.²¹

During the intraoperative phase, ERAS protocols advocate for a number of evidence-based interventions aimed at minimizing surgical stress and preserving physiological function. These interventions may include the use of minimally invasive surgical techniques, goal-directed fluid therapy, and multimodal analgesia strategies.²² By employing these perioperative measures, ERAS protocols seek to mitigate the systemic inflammatory response to surgery and minimize the use of opioid analgesics, thus promoting faster recovery and earlier mobilization.

Postoperatively, ERAS protocols emphasize early feeding, mobilization, and multimodal analgesia to facilitate rapid recovery and reduce the risk of complications such as ileus and thromboembolism. Enhanced postoperative care pathways within ERAS programs often involve a coordinated effort among surgeons, anesthesiologists, nurses, and other healthcare providers to ensure adherence to protocol guidelines and optimize patient outcomes.²³ Through the implementation of standardized care pathways and enhanced monitoring protocols, ERAS programs strive to identify and address any deviations from the expected recovery trajectory promptly.

The impact of ERAS protocols on postoperative outcomes has been the subject of numerous studies and systematic reviews, which have consistently demonstrated their effectiveness in improving patient outcomes and reducing healthcare costs [24]. By reducing the incidence of complications such as surgical site infections, pneumonia, and venous thromboembolism, ERAS protocols not only enhance patient recovery but also contribute to the efficient utilization of healthcare resources. Moreover, the emphasis on early discharge and outpatient management within ERAS pathways can assist alleviate burden on inpatient facilities and reduce overall cost of care for surgical patients.

Despite the proven benefits of ERAS protocols, their widespread adoption may be hindered by various barriers, including resource constraints, institutional resistance to change, and clinician attitudes towards protocol adherence.²⁵ Overcoming these barriers requires a concerted effort to raise awareness about the evidence supporting ERAS practices, provide education and training to healthcare providers, and implement quality improvement initiatives to monitor and evaluate the impact of protocol implementation.

The implementation of Enhanced Recovery After Surgery (ERAS) protocols has significantly enhanced postoperative outcomes in general surgical patients by optimizing perioperative care and promoting evidence-based practices. Through a comprehensive approach that encompasses preoperative optimization, intraoperative

management, and postoperative care, ERAS protocols aim to improve patient recovery, reduce the incidence of complications, and minimize healthcare costs. Continued research and quality improvement efforts are essential to further refine and optimize ERAS pathways, ensuring that all surgical patients can benefit from the advancements in perioperative care.

CONCLUSION

The execution of Enhanced Recovery After Surgery (ERAS) protocols in general surgical patients has demonstrated significant benefits in optimizing postoperative outcomes. Through a comprehensive assessment, it was evident that ERAS protocols positively impacted various facets of patient recovery, including condensed length of hospital stay, decreased complication rates, and improved patient satisfaction. By employing a multidisciplinary approach and incorporating evidence-based strategies, healthcare providers successfully enhanced the overall surgical experience for patients. Those results emphasize importance of integrating ERAS protocols into standard surgical care practices, ultimately contributing to improved patient results and healthcare system efficiency.

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Address for Correspondence:

Dr. Atif Iqbal, Jinnah Internation Hospital, Abbottabad-Pakistan

Email: dratifjadoon@yahoo.com