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Effect of Enhanced Recovery After Surgery (ERAS) Protocols on Surgical Outcomes in Abdominal Surgeries

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Abstract: ***Enhanced Recovery After Surgery (ERAS) protocols are evidence-based perioperative care pathways designed to reduce surgical stress, preserve physiological function, and accelerate postoperative recovery. This prospective observational study evaluated the impact of ERAS protocols on postoperative outcomes in patients undergoing elective abdominal surgeries. Eighty patients were divided into ERAS (n=40) and conventional care (n=40) groups. The ERAS group demonstrated significantly reduced length of hospital stay, earlier ambulation, faster return to oral intake, and lower postoperative complication rates. ERAS protocols are effective, safe, and feasible in tertiary care teaching hospitals.***

Keywords: Enhanced Recovery After Surgery; ERAS; Abdominal Surgery; Postoperative Recovery; Length of Hospital Stay

1. Introduction

Abdominal surgical procedures constitute a major proportion of the operative workload in tertiary care hospitals and are commonly associated with significant postoperative morbidity. Patients frequently experience postoperative pain, delayed return of gastrointestinal function, fatigue, and prolonged hospitalization, all of which contribute to increased healthcare costs and reduced patient satisfaction. Conventional perioperative practices, such as prolonged preoperative fasting, liberal intravenous fluid administration, routine use of nasogastric tubes and drains, delayed ambulation, and opioid-dominant analgesia, have traditionally been employed but are now recognized to negatively impact postoperative recovery. Enhanced Recovery After Surgery (ERAS) protocols were developed to address these shortcomings by introducing a structured, evidence-based, multidisciplinary approach to perioperative care. First described by Kehlet and colleagues, ERAS focuses on attenuation of the surgical stress response, maintenance of physiological homeostasis, and early restoration of normal function. Core elements of ERAS include preoperative patient counseling, shortened fasting with carbohydrate loading, standardized anesthetic techniques, multimodal opioid-sparing analgesia, goal-directed fluid therapy, early oral feeding, and early mobilization. Over the past two decades, ERAS protocols have demonstrated consistent benefits across various surgical specialties, particularly in colorectal, hepatobiliary, gynecological, and urological surgeries. Meta-analyses and large multicenter studies have reported reductions in postoperative complications, shorter length of hospital stay, faster recovery, and improved patient satisfaction without an increase in readmission rates. Despite robust international evidence, implementation of ERAS pathways in Indian public-sector and teaching hospitals remains inconsistent due to limited resources, lack of awareness, and resistance to changing traditional surgical practices.

Given the high burden of abdominal surgeries performed in Indian tertiary care centers, evaluation of ERAS protocols in this context is essential. The present study was undertaken to assess the impact of ERAS protocols on postoperative outcomes following elective abdominal surgeries and to determine their feasibility and effectiveness within a tertiary care teaching hospital in India.

2. Materials and Methods

This prospective observational study was conducted over a one-year period in a tertiary care teaching hospital. A total of 80 adult patients undergoing elective abdominal surgeries were included. Patients were allocated into two groups: ERAS (n=40) and conventional perioperative care (n=40). The ERAS protocol included preoperative counseling, reduced fasting duration, multimodal analgesia with opioid-sparing strategies, early oral feeding, early mobilization, and selective use of tubes and drains. Postoperative outcomes assessed included length of hospital stay, time to ambulation, time to oral intake, postoperative complications, and 30-day readmission rates. Statistical analysis was performed using appropriate tests, with a p-value <0.05 considered statistically significant.

3. Results

Table 1: Demographic Characteristics

Variable	ERAS (n=40)	Conventional (n=40)	p-value
Mean Age (years)	44.1±11.2	45.3 ± 12.0	0.61
Male/Female	23 / 17	24 / 16	0.82
Laparoscopic Procedures (%)	55%	52.5%	0.71

Table 2: Postoperative Outcomes

Outcome	ERAS	Conventional	p-value
Hospital Stay (days)	3.3 ± 0.8	5.5 ± 1.3	<0.001
Time to Ambulation (hours)	15.1 ± 3.4	31.8 ± 6.5	<0.001
Time to Oral Intake (hours)	11.2 ± 3.1	26.9 ± 4.7	<0.001

Table 3: Postoperative Complications

Complication	ERAS (%)	Conventional (%)	p-value
Surgical Site Infection	5%	17.5%	0.04
Postoperative Ileus	5%	15%	0.05
Urinary Retention	2.5%	7.5%	0.31

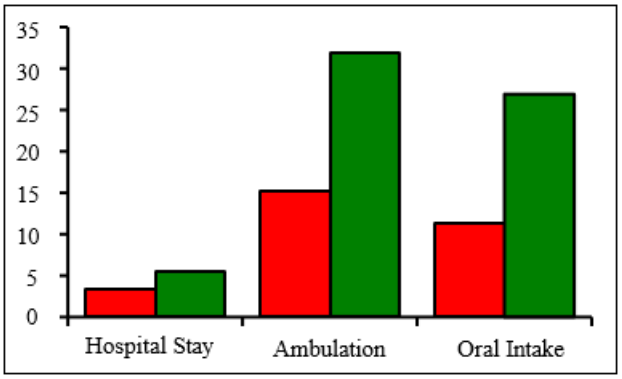

Figure 1: Comparison of Key Recovery Parameters

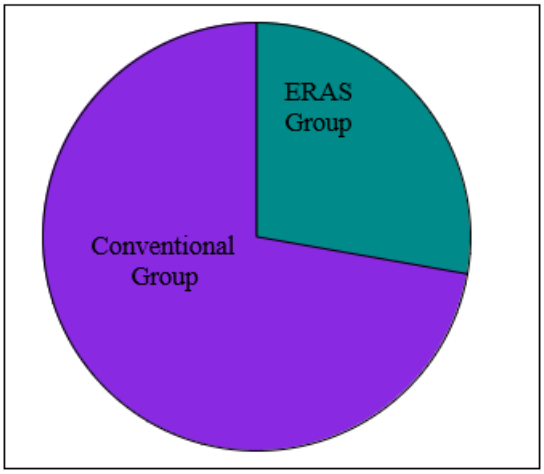

Figure 2: Distribution of Postoperative Complications

4. Discussion

The present study demonstrates that implementation of ERAS protocols in elective abdominal surgeries results in significantly improved postoperative outcomes when compared with conventional perioperative care. Patients managed under ERAS pathways experienced shorter hospital stays, earlier ambulation, and faster resumption of oral intake, reflecting effective attenuation of the surgical stress response. Early mobilization is a cornerstone of ERAS and plays a critical role in reducing postoperative pulmonary complications, muscle deconditioning, and thromboembolic events. In the present study, ERAS patients achieved ambulation significantly earlier than those receiving conventional care, which likely contributed to the observed reduction in postoperative morbidity. Similarly, early initiation of oral feeding promotes gastrointestinal motility, reduces insulin resistance, and decreases the incidence of postoperative ileus. The lower rates of surgical site infection and postoperative ileus observed in the ERAS group further support the safety and effectiveness of ERAS protocols. These findings are consistent with previous international studies and meta-analyses that have demonstrated reductions in postoperative complications and length of hospital stay across a wide range of abdominal surgical procedures. Importantly, the benefits of ERAS were achieved without an increase in readmission rates, highlighting that accelerated discharge does not compromise patient safety. From an institutional perspective, adoption of ERAS protocols has important implications for resource utilization, particularly in high-volume public-sector hospitals. Reduced length of stay allows for better bed availability, decreased healthcare costs, and improved patient throughput.

Despite perceived barriers such as staffing limitations and resistance to change, the findings of this study demonstrate that ERAS pathways can be successfully implemented in tertiary care teaching hospitals with minimal additional resource requirements. While the present study provides valuable insights, certain limitations should be acknowledged. The single-center design and relatively small sample size may limit generalizability. Additionally, long-term outcomes such as quality of life and return to work were not assessed. Future multicenter randomized controlled trials with larger sample sizes and extended follow-up are required to further validate these findings and to establish standardized ERAS pathways for widespread implementation in the Indian healthcare setting.

Informed Consent
Written informed consent was obtained from all participants.

Conflict of Interest
The authors declare no conflict of interest.

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