A Impact of ERAS Protocol on Postoperative Recovery in Abdominal Surgery

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***Abstract Introduction**: Enhanced Recovery After Surgery (ERAS) protocols are evidence-based perioperative care pathways designed to reduce surgical stress, optimize physiological function, and accelerate recovery. Their role in abdominal surgery has gained substantial importance due to high postoperative morbidity associated with conventional care.**Materials and Methods**:A prospective comparative study was conducted among 120 patients undergoing elective abdominal surgeries. Patients were divided into two groups: ERAS group (n=60) and Conventional Care group (n=60). Parameters evaluated included time to ambulation, time to oral intake, length of hospital stay, postoperative pain scores, complication rates, and readmission rates. Statistical analysis was performed using SPSS version 25.**Results**:The ERAS group demonstrated significantly earlier ambulation (12.4 ± 3.1 hrs vs 26.8 ± 5.2 hrs), earlier initiation of oral intake (18.6 ± 4.3 hrs vs 36.2 ± 6.1 hrs), reduced hospital stay (4.2 ± 1.1 days vs 7.8 ± 1.5 days), lower pain scores, and fewer complications (15% vs 33.3%). Readmission rates were comparable between groups.**Conclusion**:Implementation of ERAS protocols significantly improves postoperative recovery outcomes in abdominal surgery without increasing readmission rates. ERAS should be considered a standard perioperative care model.*

***Keywords**: ERAS, abdominal surgery, postoperative recovery, enhanced recovery, hospital stay, surgical outcomes*

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INTRODUCTION

Abdominal surgery is associated with considerable physiological stress, leading to postoperative pain, delayed gastrointestinal recovery, prolonged immobilization, and increased morbidity[1]. Traditional perioperative management often includes prolonged fasting, liberal fluid administration, delayed feeding, and restricted mobilization, which may contribute to extended recovery times[2].

Enhanced Recovery After Surgery (ERAS) is a multimodal perioperative care pathway aimed at minimizing surgical stress and supporting early return of function[3]. First introduced in colorectal surgery, ERAS protocols have now been widely adopted across multiple surgical specialties[4]. The core principles include preoperative counseling, minimal fasting, carbohydrate loading, avoidance of routine nasogastric tubes, multimodal analgesia, early mobilization, and early enteral nutrition[5].

Surgical stress triggers neuroendocrine and inflammatory responses characterized by increased cortisol, catecholamines, and cytokine release[6]. This response contributes to insulin resistance, muscle catabolism, and impaired immune function[7]. ERAS pathways aim to attenuate these stress responses and maintain physiological homeostasis[8].

Several randomized trials and meta-analyses have demonstrated that ERAS significantly reduces length of hospital stay and postoperative complications without increasing mortality or readmissions[9] [10]. Early mobilization and optimized pain control reduce pulmonary complications and thromboembolic events[11]. Similarly, early enteral feeding enhances gastrointestinal motility and decreases infectious complications[12].

In abdominal surgery, especially colorectal, hepatobiliary, and upper gastrointestinal procedures, ERAS protocols have shown promising outcomes[13]. However, variability in implementation and adherence remains a concern[14]. Standardization and multidisciplinary collaboration are crucial for optimal results[15].

Despite increasing adoption worldwide, data from developing healthcare settings remain limited[16]. Evaluating the effectiveness of ERAS in real-world hospital environments is essential to establish its feasibility and safety.

The present study aims to assess the impact of ERAS protocols on postoperative recovery parameters in patients undergoing elective abdominal surgery, comparing outcomes with conventional perioperative care.

MATERIALS AND METHODS

Prospective comparative study conducted over 18 months at a tertiary care hospital.

Study Design

120 adult patients undergoing elective abdominal surgery.

Sample Size

Group A (ERAS group): 60 patients managed under ERAS protocol

Group B (Conventional group): 60 patients managed with traditional perioperative care

Inclusion Criteria

- Age 18–70 years
- Elective open or laparoscopic abdominal surgery
- ASA grade I–III
- Informed consent provided

Exclusion Criteria

- Emergency surgeries
- ASA grade IV and above
- Severe hepatic/renal dysfunction
- Pregnancy
- Immunocompromised patients

- Reoperation within 30 days

Surgical Procedure

ERAS Protocol Components

- Preoperative counseling
- Reduced fasting (6 hrs solids, 2 hrs clear fluids)
- Preoperative carbohydrate loading
- No routine bowel preparation (unless indicated)
- Multimodal opioid-sparing analgesia
- Goal-directed fluid therapy
- Early removal of drains
- Early ambulation (within 12 hrs)
- Early oral feeding (within 24 hrs)

Parameters Studied

- Time to ambulation (hours)
- Time to first oral intake (hours)
- Postoperative pain score (VAS)
- Length of hospital stay (days)
- Postoperative complications (Clavien-Dindo classification)
- 30-day readmission rate

Statistical Analysis

Data analyzed using SPSS version 25. Continuous variables expressed as mean ± SD; categorical variables as percentage. Independent t-test and Chi-square test used. $p < 0.05$ considered significant.

RESULTS

Table 1: Demographic Characteristics

Variable	ERAS (n=60)	Conventional (n=60)	p-value
Mean Age (years)	46.2 ± 12.1	47.5 ± 11.8	0.62
Male (%)	55%	58%	0.74
ASA I/II (%)	83%	80%	0.68

Interpretation: No significant demographic differences between groups.

Table 2: Time to Ambulation

Group	Mean Hours	p-value
ERAS	12.4 ± 3.1	<0.001
Conventional	26.8 ± 5.2	

Interpretation: ERAS significantly reduced time to ambulation.

Table 3: Time to Oral Intake

Group	Mean Hours	p-value
ERAS	18.6 ± 4.3	<0.001
Conventional	36.2 ± 6.1	

Interpretation: Early feeding achieved in ERAS group.

Table 4: Length of Hospital Stay

Group	Mean Days	p-value
ERAS	4.2 ± 1.1	<0.001
Conventional	7.8 ± 1.5	

Interpretation: ERAS significantly reduced hospital stay.

Table 5: Postoperative Complications

Complication	ERAS (%)	Conventional (%)
SSI	6.7	15
Ileus	5	10
Pulmonary	3.3	8.3
Total	15	33.3

Interpretation: Wound infection significantly lower in LA. Lower complication rate in ERAS group.

Table 6: 30-Day Readmission

Group	Readmission (%)	p-value
ERAS	5%	0.41
Conventional	8.3%	

Interpretation: No significant difference in readmission rates.

DISCUSSION

The present study demonstrates that ERAS protocols significantly enhance postoperative recovery in abdominal surgery. Reduced hospital stay observed in our study aligns with findings from Ljungqvist et al.[17] and Thiele et al.[18] who reported 2–3 day reductions in length of stay following ERAS implementation.

Early mobilization plays a critical role in preventing postoperative pulmonary complications and venous thromboembolism[19]. Our findings support those of Gustafsson et al.[20] who demonstrated improved functional recovery with early ambulation strategies.

Early enteral nutrition reduces insulin resistance and preserves gut integrity[21]. Meta-analyses by Greco et al.[22] showed significant reductions in ileus and infections with ERAS pathways.

Lower complication rates in our ERAS group correspond with results reported in colorectal and hepatobiliary surgeries[23]. Multimodal analgesia minimized opioid consumption, contributing to reduced ileus and earlier recovery[24].

Importantly, ERAS did not increase readmission rates, consistent with findings from international cohort studies[25].
These results reinforce that ERAS is safe, effective, and feasible in abdominal surgical practice.

CONCLUSION

ERAS protocols significantly reduce hospital stay, accelerate recovery, and decrease postoperative complications in abdominal surgery without increasing readmission rates. Adoption of ERAS pathways should be encouraged as a standard perioperative care approach.

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