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A Comparative Study on the Effectiveness of Enhanced Recovery After Surgery (ERAS) Versus Conventional Management in Patients Undergoing Gastrointestinal Surgeries

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ABSTRACT

Background: Enhanced Recovery After Surgery (ERAS) is a multimodal perioperative care pathway designed to reduce surgical stress and improve postoperative recovery. Its implementation in gastrointestinal surgery has demonstrated improved clinical outcomes. **Objective**: To compare the effectiveness of ERAS protocols with conventional perioperative management in patients undergoing gastrointestinal surgeries. **Methods**: A prospective cohort observational study was conducted among 50 patients undergoing elective gastrointestinal surgery between July 2022 and June 2024. Patients were divided into ERAS and conventional management groups. Outcomes assessed included length of hospital stay, time to first bowel movement, postoperative pain scores, complications, and patient satisfaction. **Results**: The ERAS group demonstrated significantly reduced hospital stay (6.0 ± 1.5 vs 7.2 ± 1.8 days; $p = 0.024$), earlier bowel recovery (1.5 ± 0.5 vs 2.5 ± 0.8 days; $p < 0.001$), and lower pain scores (4.0 ± 1.5 vs 5.0 ± 1.8; $p = 0.039$). Complication rates and patient satisfaction were comparable between groups. No mortality was observed. **Conclusion** :ERAS protocols significantly enhance postoperative recovery and reduce hospital stay and pain without increasing complications. Adoption of ERAS pathways can improve surgical outcomes and healthcare efficiency.

Keywords*: ERAS; gastrointestinal surgery; enhanced recovery; perioperative care; postoperative outcomes.*

INTRODUCTION

Enhanced Recovery After Surgery (ERAS) represents a paradigm shift in perioperative care aimed at minimizing surgical stress, preserving physiological function, and accelerating postoperative recovery. First introduced by Kehlet in 1997, ERAS integrates evidence-based surgical, anesthetic, and nursing strategies to optimize patient outcomes.

Traditional perioperative practices such as prolonged fasting, routine use of nasogastric tubes and drains, delayed feeding, and extended immobilization have been challenged due to limited scientific evidence supporting their effectiveness. ERAS protocols emphasize patient education, reduced preoperative fasting, multimodal analgesia, early mobilization, early enteral nutrition, and goal-directed fluid therapy.

Surgical stress contributes significantly to postoperative morbidity, delayed recovery, and prolonged hospitalization. ERAS pathways attenuate this stress response, reducing complications, healthcare costs, and length of stay while improving patient satisfaction and recovery quality.

Although ERAS is widely accepted in colorectal surgery, further evaluation in broader gastrointestinal procedures is essential to strengthen its adoption in routine surgical practice.

MATERIALS AND METHODS

Study Design
Prospective cohort observational study.

Study Setting
Department of General Surgery and Surgical Gastroenterology, GMKMCH, Salem, Tamil Nadu, India.

Study Period
July 2022 – June 2024.

Sample Size
50 patients undergoing elective gastrointestinal surgery.

Inclusion Criteria
- Patients >12 years of age
- Elective open gastrointestinal surgeries

Exclusion Criteria
- Laparoscopic surgeries
- Emergency surgeries
- Relaparotomies
- Immunocompromised patients

Study Groups
ERAS Group: Managed using ERAS protocol
Conventional Group: Managed using traditional perioperative care

ERAS Protocol Components
- Preoperative counseling and optimization
- Reduced fasting and carbohydrate loading
- Multimodal opioid-sparing analgesia
- Early removal of drains and tubes
- Early mobilization
- Early enteral feeding
- Goal-directed fluid therapy

Data Collection
The following variables were recorded:
- Demographic characteristics
- Comorbidities
- Surgical duration
- Postoperative recovery parameters
- Pain scores
- Complications
- Patient satisfaction

Outcome Measures
Primary Outcomes
- Length of hospital stay
- Time to first bowel movement

Secondary Outcomes
- Pain scores
- Complications
- Patient satisfaction

Statistical Analysis
Data were analyzed using appropriate statistical tests. A p-value < 0.05 was considered statistically significant.

RESULTS

Baseline Characteristics

Table 1: Patient Characteristics

Variable	ERAS	Conventional	p-value
Mean Age (years)	28.5 ± 6.5	29.8 ± 7.1	0.235
Male (%)	50	51	0.887
BMI	25.3 ± 3.5	24.8 ± 3.7	0.652
Hypertension (%)	50	55	0.617

No significant differences were observed between groups.

Postoperative Recovery Outcomes

Table 2: Clinical Outcomes

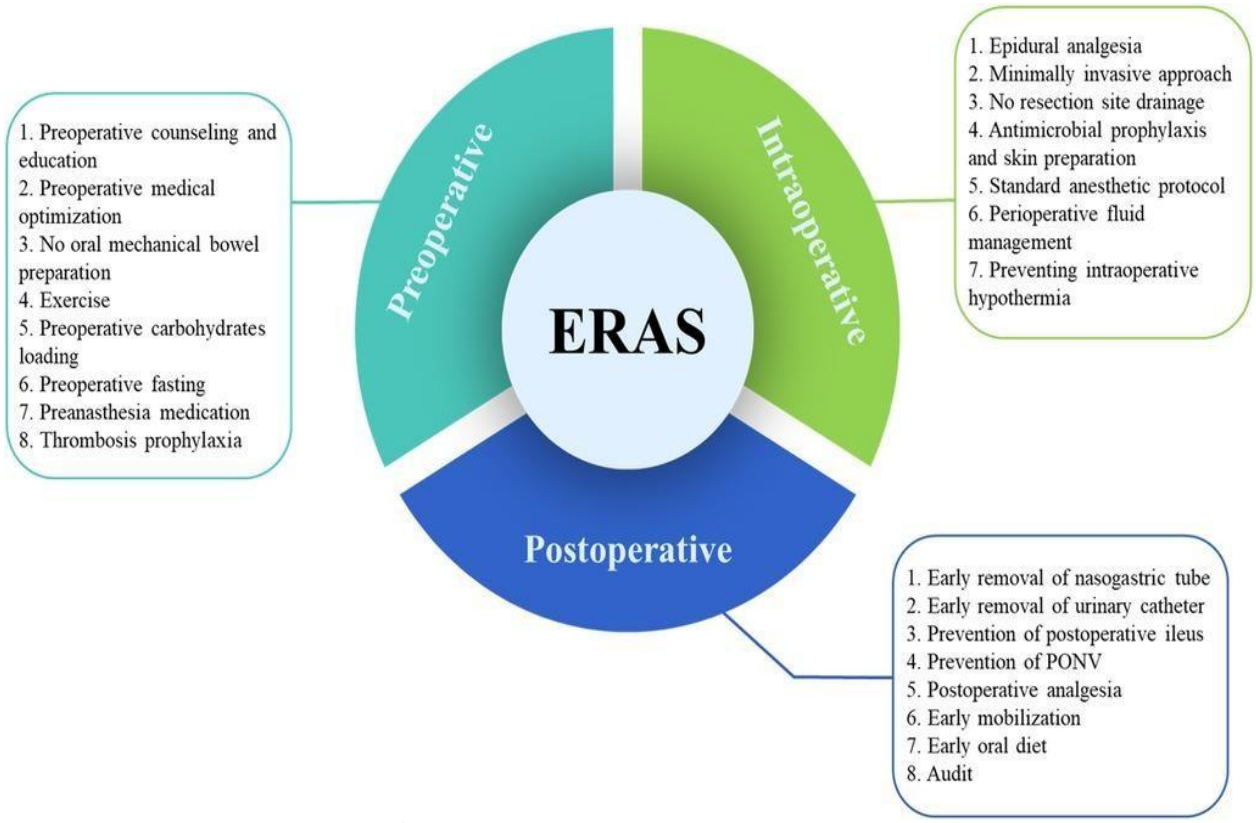
Outcome	ERAS	Conventional	p-value
Hospital Stay (days)	6.0 ± 1.5	7.2 ± 1.8	**0.024**
First Bowel Movement (days)	1.5 ± 0.5	2.5 ± 0.8	**<0.001**
Pain Score	4.0 ± 1.5	5.0 ± 1.8	**0.039**
Complications (%)	10	15	0.657

Additional Observations

- No mortality recorded in either group
- Pain reduction more pronounced among female patients
- Patients with hypertension had shorter hospital stay in ERAS group

Diagram: ERAS Recovery Pathway

Preoperative Optimization → Reduced Fasting → Multimodal Analgesia → Early Feeding → Early Mobilization → Faster Recovery.



Source: Yongheng Zhou et al., 2023 [7th]

Diagram: Outcome Comparison

ERAS Protocol

- Faster bowel recovery
- Lower pain scores
- Shorter hospital stay

Conventional Care

✕ Sl delayed recovery
✕ Higher pain levels
✕ Longer hospitalization

DISCUSSION

Enhanced Recovery After Surgery protocols significantly improved postoperative recovery outcomes in patients undergoing gastrointestinal surgery. The groups were comparable at baseline, ensuring that observed differences were attributable to perioperative care pathways.

A significant reduction in hospital stay in the ERAS group reflects accelerated functional recovery and improved perioperative management. Early mobilization, early feeding, and optimized pain control contribute to shorter hospitalization, reduced costs, and decreased risk of hospital-acquired infections.

Early return of bowel function observed in ERAS patients indicates improved gastrointestinal motility and reduced postoperative ileus. Avoidance of prolonged fasting and opioid-heavy analgesia promotes physiological recovery.

Lower postoperative pain scores demonstrate the effectiveness of multimodal analgesia strategies. Reduced opioid use minimizes adverse effects such as nausea, sedation, and delayed bowel recovery.

Although complication rates were slightly lower in the ERAS group, the difference was not statistically significant. Importantly, ERAS did not increase complications, confirming its safety profile.

Subgroup findings suggest that ERAS may provide additional benefits for female patients and individuals with hypertension, highlighting the importance of individualized perioperative care.

These findings align with global literature demonstrating improved recovery outcomes, reduced hospital stay, and enhanced patient comfort with ERAS implementation.

Limitations

- Small sample size
- Single-center study
- Exclusion of laparoscopic and emergency surgeries
- Limited long-term follow-up
- Future multicenter randomized trials are recommended to validate these findings.

CONCLUSION

Enhanced Recovery After Surgery protocols significantly improve postoperative recovery in gastrointestinal surgery. ERAS reduces hospital stay, accelerates bowel recovery, and improves pain control without increasing complications.

Adoption of ERAS pathways can enhance surgical outcomes, improve patient experience, and optimize healthcare resource utilization.

Ethical Approval

The study was conducted in accordance with institutional ethical standards. Written informed consent was obtained from all participants.

Conflict of Interest

The authors declare no conflict of interest.

Funding

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