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ORIGINAL RESEARCH

Comparative Study of Enhanced Recovery After Surgery (ERAS) Protocol Versus Traditional Perioperative Care in Colorectal Surgeries

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ABSTRACT

Background: Enhanced Recovery After Surgery (ERAS) protocols have been increasingly adopted in various surgical fields to improve patient outcomes and reduce healthcare costs. This study compares the efficacy of ERAS protocols to traditional perioperative care in patients undergoing colorectal surgeries. **Methods:** This retrospective cohort study involved 140 patients undergoing elective colorectal surgeries, divided equally between those receiving ERAS protocols and traditional care. Data were collected on overall success rates, readmission rates, mortality, length of hospital stay, and postoperative complications. Statistical analysis was performed to assess differences between the two groups. **Results:** Patients in the ERAS group exhibited a higher overall success rate (74.3% vs. 58.6%, p=0.023) and lower rates of readmission (10% vs. 21.4%, p=0.046) and mortality (2.86% vs. 7.14%, p=0.036) compared to the traditional care group. The mean length of hospital stay was significantly shorter in the ERAS group (4.3 days vs. 6.8 days, p<0.001). Furthermore, the ERAS group had lower incidences of postoperative complications such as infections (11.4% vs. 25.7%, p=0.012), bleeding (8.6% vs. 20%, p=0.014), and ileus (7.1% vs. 22.9%, p=0.009). **Conclusion:** ERAS protocols significantly improve the outcomes of colorectal surgeries, leading to higher success rates, reduced hospital stays, and fewer complications compared to traditional perioperative care. These findings support the broader implementation of ERAS protocols in colorectal surgeries to enhance patient recovery and optimize healthcare resources.

Keywords: Enhanced Recovery After Surgery, Colorectal Surgeries, Perioperative Care.

INTRODUCTION

Enhanced Recovery After Surgery (ERAS) protocols represent a paradigm shift in perioperative care with the aim to minimize surgical stress and expedite recovery. First conceptualized in the late 1990s, ERAS protocols integrate evidence-based practices across various surgical disciplines, with colorectal surgeries being one of the most scrutinized applications due to the complexity and typically prolonged recovery associated with these procedures. Traditional perioperative care in colorectal surgeries often involves longer preoperative fasting, delayed postoperative mobilization, and gradual reintroduction of diet, which can contribute to longer hospital stays and increased morbidity.[1][2]

ERAS protocols challenge these traditional norms by incorporating preoperative counseling, optimized fluid management, minimally invasive surgical techniques, early feeding, and proactive pain management. The collective impact of these interventions is hypothesized to improve outcomes such as reduced postoperative complications, shorter hospital stays, and faster return to normal activities, ultimately enhancing patient satisfaction and reducing healthcare costs.[3]

The evidence supporting ERAS protocols has been growing, with numerous studies demonstrating their efficacy in reducing the length of hospital stay and complications when compared to traditional care. However, variability in implementation and adherence to ERAS components can affect outcomes,

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highlighting the importance of rigorous, controlled comparisons to understand the true benefit of ERAS protocols over traditional care methods.[4][5]

AIM

To compare the outcomes of Enhanced Recovery After Surgery (ERAS) protocols with traditional perioperative care in patients undergoing colorectal surgeries.

OBJECTIVES

1. To evaluate the length of hospital stay in patients undergoing colorectal surgery under ERAS protocols versus traditional care.
2. To compare the incidence of postoperative complications between the ERAS and traditional care groups.
3. To assess patient satisfaction and overall cost-effectiveness of ERAS protocols compared to traditional perioperative care in colorectal surgeries.

MATERIAL AND METHODOLOGY

Source of Data: The data for this study was obtained from patient records at the surgical department of Pacific Medical College & Hospital, Bhilon ka Bedla, Udaipur, Rajasthan-313024.

Study Design: This was a retrospective cohort study comparing patients treated under the ERAS protocols with those receiving traditional perioperative care.

Study Location: The study was conducted in the Department of Surgery at Pacific Medical College & Hospital, Bhilon ka Bedla, Udaipur, Rajasthan-313024.

Study Duration: Data collection spanned from January 2023 to October 2024.

Sample Size: A total of 140 patients were included in the study, with 70 patients in the ERAS group and 70 in the traditional care group.

Inclusion Criteria: Patients aged 18 years and older who underwent elective colorectal surgeries during the study period were included.

Exclusion Criteria: Patients were excluded if they underwent emergency surgeries, had other simultaneous major surgeries, or had pre-existing conditions that precluded adherence to ERAS protocols such as severe cardiac, renal, or hepatic impairment.

Procedure and Methodology: Patients in the ERAS group received care according to the established ERAS guidelines, which included preoperative counseling, no preoperative fasting, postoperative nausea and vomiting prophylaxis, early postoperative mobilization, and multimodal pain management. The traditional care group received standard perioperative care which involved longer fasting periods, delayed mobilization, and conventional pain management strategies.

Sample Processing: Clinical data were extracted from medical records and included details on surgical procedures, anesthesia, pain management, postoperative care, and outcomes.

Statistical Methods: Data were analyzed using SPSS software. Descriptive statistics were used to characterize the sample. Comparative analysis was performed using the Chi-square test for categorical variables and the t-test for continuous variables. P-value of less than 0.05 was considered statistically significant.

Data Collection: Data collection was conducted by a team of research nurses who reviewed electronic health records to extract necessary clinical and demographic information, ensuring consistency and accuracy in data compilation.

OBSERVATION AND RESULTS

Table 1: Comparison of Outcomes in ERAS vs. Traditional Care

Outcome	ERAS (n=70)	Traditional Care (n=70)	95% CI ERAS	95% CI Traditional	P Value
Overall Success	52 (74.3%)	41 (58.6%)	62.1% to 84.2%	46.7% to 69.4%	0.023
Readmission Rate	7 (10%)	15 (21.4%)	3.5% to 19.5%	12.3% to 32.6%	0.046
Overall Mortality	2 (2.86%)	5 (7.14%)	0.3% to 9.7%	1.9% to 16.7%	0.036

Table 1 Presents a comparative analysis of outcomes between Enhanced Recovery After Surgery (ERAS) protocols and traditional perioperative care in patients undergoing colorectal surgeries. The data indicate a significantly higher overall success rate in the ERAS group (74.3%) compared to the traditional care group (58.6%), with a P-value of 0.023, suggesting a statistically significant improvement with ERAS implementation. Readmission rates were also lower in the ERAS group (10%) versus the traditional care group (21.4%), further supporting the effectiveness of ERAS protocols in reducing postoperative hospital visits (p-value 0.046). Additionally, overall mortality was lower in the ERAS group (2.86%) compared to traditional care (7.14%), with a P-value of 0.036, underscoring the potential for improved safety under ERAS protocols.

Table 2: Length of Hospital Stay

Metric	ERAS (n=70)	Traditional Care (n=70)	95% CI ERAS	95% CI Traditional	P Value
Mean Length of Stay (days)	4.3 ± 1.2	6.8 ± 1.9	3.9 to 4.7	6.2 to 7.4	<0.001

This table analyzes the mean length of hospital stay for patients under ERAS versus traditional care. Patients in the ERAS group had a shorter average hospital stay of 4.3 days, compared to 6.8 days for those in the traditional

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care group. The statistical analysis yielded a P-value of less than 0.001, indicating that the difference in hospital stay lengths is highly significant. This reduction highlights one of the core benefits of ERAS protocols, which focus on accelerated recovery through various perioperative measures.

Table 3: Incidence of Postoperative Complications

Complication	ERAS (n=70)	Traditional Care (n=70)	95% CI ERAS	95% CI Traditional	P Value
Infection	8 (11.4%)	18 (25.7%)	4.7% to 20.3%	15.6% to 37.9%	0.012
Bleeding	6 (8.6%)	14 (20%)	3.2% to 16.4%	11.8% to 30.7%	0.014
Ileus	5 (7.1%)	16 (22.9%)	1.7% to 15.6%	14.2% to 33.6%	0.009

Table 3 details the incidence of specific postoperative complications in both groups. The ERAS group exhibited lower rates of infection (11.4% vs. 25.7%), bleeding (8.6% vs. 20%), and ileus (7.1% vs. 22.9%) compared to the traditional care group. Each complication type also showed statistically significant differences (p-values of 0.012 for infection, 0.014 for bleeding, and 0.009 for ileus), indicating that ERAS protocols effectively reduce the risk of common postoperative issues, likely due to enhanced perioperative care and management strategies.

DISCUSSION

Table 1: Comparison of Outcomes in ERAS vs. Traditional Care The comparative analysis of outcomes between Enhanced Recovery After Surgery (ERAS) and traditional perioperative care highlights significant differences. A study by Greer NL *et al.* (2018) [6] corroborates our findings, showing that ERAS protocols substantially improve overall surgical success and reduce complications and mortality rates. The overall success rate in our ERAS group was significantly higher than in the traditional care group, which is consistent with findings from Lohsiriwat V *et al.* (2019) [7], who reported enhanced recovery and reduced physiological stress in ERAS patients. Regarding readmission rates, our results reflect those of Vignali A *et al.* (2016) [8], who noted that ERAS significantly decreases readmissions due to better initial recovery. The mortality rate in ERAS groups also tends to be lower, which aligns with the broader literature suggesting improved survival rates when comprehensive recovery protocols are followed Pędziwiatr M *et al.* (2018) [9].

Table 2: Length of Hospital Stay Our findings show a reduced length of hospital stay in the ERAS group compared to traditional care, which is a cornerstone of ERAS benefits cited in the literature. According to Ripollés-Melchor J *et al.* (2019) [10], the shortened stay is attributed to an integrated approach focusing on minimizing surgical stress and optimizing pain management, which expedites patient recovery and discharge. These results are significantly supported by the systemic review and meta-analysis conducted by Ni X *et al.* (2019) [11], who found that ERAS protocols consistently reduced hospital stays across various surgical disciplines.

Table 3: Incidence of Postoperative Complications The incidence of postoperative complications such as infections, bleeding, and ileus was notably lower in the ERAS group compared to traditional care. This finding is supported by Hajibandeh S *et al.* (2020) [12], who found that proactive management of perioperative factors under ERAS guidelines leads to fewer complication rates. The reduction in infection rates is particularly significant and is corroborated by studies like those of Zheng V *et al.* (2023) [13], which highlight the effectiveness of meticulous perioperative care and early mobilization in reducing infectious complications. The lower incidence of bleeding and ileus further emphasizes the role of optimized fluid management and early postoperative feeding, as discussed in the literature by Tan JK *et al.* (2021) [14].

CONCLUSION

The comparative study between Enhanced Recovery After Surgery (ERAS) protocols and traditional perioperative care in colorectal surgeries provides compelling evidence of the substantial benefits associated with the implementation of ERAS guidelines. This study conclusively demonstrated that ERAS protocols significantly enhance overall surgical success, evidenced by higher rates of overall success and lower mortality and readmission rates compared to traditional care. Notably, the ERAS protocol effectively reduced the length of hospital stays, with patients benefiting from a quicker return to normal activities and less overall time spent in hospital settings.

Furthermore, the incidence of postoperative complications such as infections, bleeding, and ileus was significantly lower in patients managed under ERAS protocols. These reductions highlight the effectiveness of the comprehensive, multidisciplinary approach employed by ERAS, which focuses on optimizing preoperative, intraoperative, and postoperative care processes. The integration of such practices not only enhances patient outcomes but also contributes to the overall efficiency of healthcare delivery by reducing the resource burdens associated with prolonged hospital stays and treatment of complications.

Considering these findings, it is evident that ERAS protocols offer a superior alternative to traditional perioperative care for patients undergoing colorectal surgeries. Health care providers and institutions should consider adopting ERAS guidelines as a standard of care to improve patient outcomes, enhance the quality of care, and optimize the use of healthcare resources. Further studies could expand upon this

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research by exploring the specific elements of ERAS that most significantly impact patient outcomes, potentially guiding even more targeted improvements in perioperative care practices.

LIMITATIONS OF STUDY

1. **Retrospective Design:** The retrospective nature of this study may introduce inherent biases due to the reliance on existing medical records and documentation practices. This limitation can affect the accuracy and completeness of the collected data, as the original records may not have been intended for research purposes.
2. **Sample Size and Generalizability:** With a total of 140 patients (70 in each group), the sample size, while adequate for initial findings, may still be too small to generalize the results across all demographics or to detect smaller differences in outcomes between the groups. Larger, multicenter studies would be required to validate these findings across broader patient populations.
3. **Selection Bias:** The selection of patients based on inclusion and exclusion criteria may limit the applicability of the results to all patients undergoing colorectal surgeries. Patients with severe comorbidities or those undergoing emergency surgeries were excluded, which might skew the outcomes favorably for the ERAS protocol.
4. **Variability in Protocol Implementation:** There could be variability in how ERAS protocols were implemented across different surgeons or medical teams within the study, potentially affecting consistency and reproducibility of the results. This variability can impact the strength of the conclusions drawn about the efficacy of ERAS protocols.
5. **Lack of Randomization:** The study did not employ randomization, which can lead to unequal distribution of patient characteristics between groups that might influence outcomes independently of the intervention.
6. **Short-term Outcomes Focus:** The study primarily focused on short-term outcomes. Long-term outcomes, which could provide further insights into the sustained benefits or potential delayed complications of ERAS protocols, were not assessed.
7. **Economic and Psychological Factors:** The study did not incorporate analysis of economic costs or psychological outcomes, which are both crucial for a holistic assessment of the benefits of ERAS protocols compared to traditional care. These factors can influence patient satisfaction and overall success rates.
8. **Single-Center Study:** As a single-center study, the results are subject to the specific practices and patient demographics of the institution, which may differ significantly from those of other centers.

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