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Comparative Study between Outcomes of Traditional Care vs. ERAS-Based Care in Laparoscopic Cholecystectomy

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Abstract:-

- ***Background:***

Laparoscopic cholecystectomy is a commonly performed surgery in India. Although ERAS protocols are well-established in colorectal surgery, their role in laparoscopic cholecystectomy is still under evaluation. This study aims to compare clinical outcomes between ERAS-based care and traditional perioperative care in these patients.

- ***Methods***

This prospective observational study enrolled 200 adult patients scheduled for elective laparoscopic cholecystectomy. Participants were randomly assigned to two groups: Group A received standard perioperative care, while Group B was managed according to Enhanced Recovery After Surgery (ERAS) protocols. The study evaluated outcomes such as hospital stay duration, opioid usage, postoperative complications, pain scores, and readmission rates. Data analysis was performed using SPSS, with a p-value of less than 0.05 considered statistically significant.

- ***Conclusions***

ERAS protocols have been shown to enhance outcomes in laparoscopic cholecystectomy by reducing hospital stay, minimizing opioid requirements, and lowering the incidence of postoperative complications. The findings support wider implementation of ERAS to enhance surgical recovery and healthcare efficiency.

Keywords: *ERAS, Laparoscopic Cholecystectomy, Postoperative Recovery*.

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I. INTRODUCTION

Cholecystectomy is one of the most commonly performed surgical procedures in India. Historically, it was carried out using the open technique, which remains a major surgical approach. However, laparoscopic cholecystectomy, a minimally invasive method for gallbladder removal, has become the preferred approach since the 1990s. This technique is now widely adopted as a solution to reduce the disease burden, particularly in rural areas of India [1]. Enhanced Recovery After Surgery (ERAS) is a holistic perioperative care approach designed to reduce major complications and promote faster recovery by modulating the neurohormonal responses induced by surgical stress. Developed initially by Henrik Kehlet for colorectal surgeries, ERAS protocols have since expanded to other surgical fields to mitigate stress and related organ dysfunction [2]. Surgeons of Great Britain and Ireland [3]. and the ERAS Society [4], focus on improving perioperative outcomes [5]. Over the past decade, ERAS protocols have gained popularity for enhancing postoperative management strategies [6]. Multidisciplinary approaches that include early nutrition, mobilization, and reduced reliance on

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opioids have shown to expedite recovery, prevent PONV, and ensure patient safety while promoting timely hospital discharge [7]. Multimodal pathways designed to maintain preoperative organ function and minimize surgical stress have been effective in achieving rapid recovery [8]. Key components of ERAS protocols involve preoperative patient education, nutritional optimization, standardized analgesia and anesthesia plans, and early postoperative mobilization. Despite substantial evidence supporting the benefits of ERAS in improving outcomes, its implementation often faces challenges due to conflicts with traditional surgical practices [6].

Laparoscopic cholecystectomy, first introduced in the 1980s, has replaced the open technique as the standard approach to gallbladder removal [7].

The aim of the study is to compare the clinical outcomes of conventional perioperative care with those of Enhanced Recovery After Surgery (ERAS)-based care in patients undergoing laparoscopic cholecystectomy.

II. METHODOLOGY

- *Study design and sample size:*

A prospective observational study was conducted over one year at a tertiary care hospital, involving 200 adult patients undergoing elective laparoscopic cholecystectomy. Participants were randomly assigned to either traditional care (Group A) or ERAS-based care (Group B), with 100 patients in each group. Sample size was determined based on prior studies (power = 80%, significance = 0.05).

- *Ethical Approval:*

Ethical approval was secured from the institutional ethics committee, and written informed consent was obtained from all participants. All data were handled with strict confidentiality.

- *Inclusion Criteria:*

Patients aged 18–64 years, ASA I or II, undergoing elective laparoscopic cholecystectomy for symptomatic gallstones or chronic cholecystitis.

- *Exclusion Criteria:*

Emergency cases, ASA III or higher, pregnancy, immunosuppression, and conversions to open surgery.

- *Perioperative Management:*

Group A followed traditional protocols, including overnight fasting and delayed mobilization. Group B followed ERAS protocols: preoperative carbohydrate loading, early oral intake (6 hours post-op), multimodal analgesia, and early ambulation.

- *Surgical Procedure:*

Data analysis was performed using SPSS (version X.X). Continuous variables were assessed using either the T-test or Mann-Whitney U test, while categorical variables were analyzed using the Chi-square test or Fisher's exact test, as appropriate.

- *Data Collection & Follow-Up:*

Parameters recorded included demographics, operative time, pain scores (VAS at 6, 12, 24 hrs), time to oral intake, hospital stay, complications (Clavien-Dindo), return to activity, satisfaction, and cost. Follow-up continued for 30 days postoperatively.

- *Statistical Analysis:*

Data were analyzed using SPSS (version X.X). T-tests or Mann-Whitney U tests were used for continuous variables, and Chi-square or Fisher's exact tests for categorical data. Significance was set at $p < 0.05$.

III. RESULTS

Table 1 Demographics Distribution of Gender

Gender	ERAS	CONVENTIONAL CARE
Male	40(40%)	45(45%)
Female	60 (60%)	55(55%)
Total	100	100

In the study, the gender distribution was comparable between the two groups. The ERAS group consisted of 40% males and 60% females, while the conventional care group had 45% males and 55% females. Both groups had a higher proportion of female participants, with the ERAS group showing a slightly larger female predominance (Table 1).

Table 2 Demographics Distribution of Age

AGE	ERAS	CONVENTIONAL CARE
20-30	2	3
31-40	20	17
41-50	58	60
>50	20	20
TOTAL	100	100

The age distribution was similar in both groups, with the majority of participants falling within the 41–50 age range. In the ERAS group, 2% were aged 20–30, 20% were aged 31–40, 58% were aged 41–50, and 20% were over 50 years old. In the conventional care group, 3% were aged 20–30, 17% were aged 31–40, 60% were aged 41–50, and 20% were over 50 (Table 2).

Table 3 Demographics distribution of ASA Status

ASA STATUS	ERAS	CONVENTIONAL CARE
ASA 1	30	32
ASA2	60	58
ASA3	10	12

The ASA (American Society of Anesthesiologists) classification was comparable between both groups. In the ERAS group, 30% of patients were categorized as ASA I (healthy individuals), 60% as ASA II (patients with mild systemic disease), and 10% as ASA III (patients with severe systemic disease).Similarly, in the conventional care group,

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32% were ASA 1, 58% were ASA 2, and 12% were ASA 3. The predominance of ASA 2 in both groups indicates that most patients had mild systemic disease, and the overall health conditions were well-matched between the groups, minimizing potential bias from preoperative health differences (Table 3).

Table 4 Outcome for Length of Hospital Stay

Outcome	ERAS	CONVENTIONAL CARE
length of hospital stay	**29.6 hours± 8.75 hours**	**43.8 hours ± 12.7 hours**
Total Opioid Use (morphine equivalent units)	**11.8±3.9**	**18.7±8.8**
Readmissions	**4**	**10**
Surgical Site Infection	**3**	**8**

- *Outcome: Length of Hospital Stay*

The ERAS group had a significantly shorter hospital stay (29.6 ± 8.75 hours) compared to the conventional care group (43.8 ± 12.7 hours), indicating faster recovery and earlier discharge (Table 4).

- *Outcome: Total Opioid Use*

Opioid consumption was lower in the ERAS group (11.8 ± 3.9 units) than in the conventional group (18.7 ± 8.8 units), reflecting effective pain control with reduced opioid dependence.

- *Outcome: Readmissions*

Fewer readmissions occurred in the ERAS group (4) versus the conventional group (10), suggesting improved recovery and fewer postoperative complications.

- *Outcome: Surgical Site Infection*

The ERAS group reported fewer surgical site infections (3) compared to the conventional care group (8), highlighting better postoperative outcomes with ERAS protocols.

IV. DISCUSSION

Our study and the findings reported by Sushil Bhogawar et al [9]. demonstrate comparable results regarding the effectiveness of Enhanced Recovery After Surgery (ERAS) protocols compared to conventional care in laparoscopic cholecystectomy. Both studies highlight no significant differences in demographics, such as gender, age, or ASA status, between the ERAS and conventional care groups. In our study, 60% of the ERAS group participants were female, while 55% of the conventional care groups were female. Similarly, Bhogawar et al [9]. reported a female predominance, with 79 females in the ERAS group and 78 in the conventional group. Both studies indicate that the participants' health conditions, as reflected by ASA status, were well-matched between groups.

In a separate study comparing ERAS to conventional care in laparoscopic cholecystectomy, demographics such as gender, age, and ASA status were well-matched between the two groups. The ERAS group consisted of 40% males and 60% females, while the conventional care group had 45% males and 55% females. Both groups had similar age distributions, with a majority of participants in the 41–50 age range, and the health status (ASA) was also comparable. Kumar et al. (2024) reported that the mean age was 41.3±7.9 years in the ERAS group and 41.6±9.6 years in the conventional group. There were 17 males and 28 females in the ERAS group, and 15 males and 30 females in the conventional group [10]. In terms of outcomes, the ERAS group had a significantly shorter hospital stay (29.6 hours) compared to the conventional care group (43.8 hours). Opioid use was lower in the ERAS group (11.8 morphine-equivalent units) versus the conventional care group (18.7 units), reflecting better pain management and reduced opioid dependency. Additionally, the ERAS group had fewer readmissions (4 compared to 10) and fewer surgical site infections (3 compared to 8), highlighting the benefits of ERAS protocols in improving postoperative recovery, reducing complications, and enhancing overall patient outcomes. This aligns with the findings from R.K. Kamel's et al [11] study, where ERAS protocols consistently demonstrated superior outcomes, particularly in terms of hospital stay, pain control, and recovery time.

In the study by Madhumita Udayasankar et al [12], a total of 50 patients were divided into two groups: traditional care and ERAS (Enhanced Recovery After Surgery), with 25 patients in each group. The study assessed various perioperative outcomes, including demographic data, anxiety levels, postoperative hunger, thirst, fatigue, and overall perioperative experience. The demographic parameters between the two groups were comparable, with no significant differences in age, gender distribution, or ASA status. The results showed that the ERAS group experienced a significant reduction in anxiety levels both preoperatively and postoperatively, particularly after receiving a PowerPoint-aided explanation of the procedure. There were also significant reductions in hunger, thirst, and fatigue in the ERAS group, leading to a better overall perioperative experience. However, no significant differences were observed in blood glucose levels, pain, nausea, or vomiting between the two groups.

Comparing this with the results from the study by R.K. Kamel et al [11], which also involved comparing ERAS protocols to conventional care in cholecystectomy procedures, both studies highlight the benefits of ERAS in improving patient outcomes. In Kamel's [11], study, patients in the ERAS groups (both laparoscopic and open) had shorter hospital stays, less intraoperative bleeding, and fewer postoperative complications than those in the conventional care groups. Similarly, in Udayasankar's et al [12], study, ERAS patients reported a better overall perioperative experience with reduced anxiety, hunger, thirst, and fatigue, although pain and nausea levels remained comparable between the groups.

The findings from both studies align in showing that ERAS protocols lead to improvements in patient comfort and recovery, including reduced anxiety and better overall experiences. However, the studies diverge in terms of specific clinical outcomes. While Kamel's [11], study found significant reductions in hospital stays, pain scores, and complications in the ERAS groups, Udayasankar's study [12], found no

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significant differences in blood glucose levels, pain, nausea, or vomiting between the two groups. This suggests that while ERAS protocols are beneficial in enhancing patient experiences, certain clinical outcomes may not show significant differences between the two groups, especially when it comes to pain and postoperative complications. Our study found a significant reduction in the average hospital stay in the ERAS group (29.6 ± 8.75 hours) compared to the conventional group (43.8 ± 12.7 hours). This is consistent with Bhogawar et al.'s findings, where the mean hospital stay was shorter for the ERAS group (30.2 ± 9.95 hours) than for the conventional group (42.5 ± 11.6 hours). Both studies underscore the efficiency of ERAS protocols in promoting faster recovery and earlier discharge.

Our findings demonstrated a significantly shorter hospital stay in the ERAS group (29.6 ± 8.75 hours) compared to the conventional care group (43.8 ± 12.7 hours). This aligns with Kumar et al [10]. study, where 91.2% of the ERAS group had a hospital stay of ≤5 days, compared to only 73.4% in the conventional care group (p=0.0274). Their study also reported a significantly shorter mean duration of hospital stay in the ERAS group (p=0.0014). These findings validate the effectiveness of ERAS in facilitating earlier discharge and faster recovery. Opioid consumption was significantly lower in the ERAS groups across both studies. In our study, the ERAS group used 11.8 ± 3.9 morphine-equivalent units compared to 18.7 ± 8.8 units in the conventional care group. Bhogawar et al [9]. also reported reduced opioid use in the ERAS group (12.6 ± 4.2) compared to the conventional group (18.9 ± 7.1). These findings reinforce the role of ERAS protocols in effective pain management with reduced opioid dependency. In our study, the ERAS group showed significantly lower opioid consumption (11.8 ± 3.9 morphine-equivalent units) compared to the conventional group (18.7 ± 8.8 units). Kumar et al [10]. reported a lower mean Visual Analog Scale (VAS) score 12 hours postoperatively in the ERAS group (4.1 ± 1.6) versus the conventional group (5.7 ± 2.1, p=0.0001). This demonstrates that the ERAS protocol effectively reduces pain, minimizes opioid use, and promotes better patient comfort postoperatively. Our study observed fewer readmissions in the ERAS group (4 cases) compared to the conventional care group (10 cases), indicating improved recovery with ERAS protocols. Bhogawar et al [9] similarly reported lower readmission rates in the ERAS group (4.5%) than in the conventional group (8.4%), though this difference was not statistically significant in their analysis. Both studies demonstrate a reduction in SSI rates in the ERAS groups. Our study reported 3 SSIs in the ERAS group compared to 8 in the conventional care group. Bhogawar et al [9] similarly observed lower SSI rates in the ERAS group (3.2%) compared to the conventional group (6.2%). Although Bhogawar's study did not reach statistical significance, the findings align in suggesting that ERAS protocols may help reduce postoperative infection risk. Postoperative complications were significantly higher in the open cholecystectomy (OC) group, while ICU admission rates showed no notable difference among the four groups. Regarding hospital stay, the laparoscopic with ERAS (LE) group had the shortest duration, followed by laparoscopic conventional (LC), open with ERAS (OE), and OC groups. Pain scores were markedly higher in the OC group compared to the OE group. Additionally, postoperative outcomes such as the timing of first flatus and total hospital stay favored laparoscopic approaches, particularly when ERAS protocols were applied. The study found no reoperations or readmissions within 30 days post-surgery, indicating a positive safety profile across all groups.

V. CONCLUSION

This study shows that Enhanced Recovery After Surgery (ERAS) protocols significantly improve outcomes in laparoscopic cholecystectomy, including shorter hospital stays, reduced opioid use, fewer readmissions, and lower infection rates. Comparable demographics and ASA status in both groups strengthen these findings. Integrating ERAS into routine practice can enhance recovery and efficiency, though broader adoption requires addressing traditional practice barriers and encouraging multidisciplinary collaboration.

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REFERENCES

[1]. Hill AG, Hill GL. Metabolic response to severe injury. Br J Surg. 1998;85(7):884-90. 2168.1998.00779.x. doi: 10.1046/j.1365
[2]. Kehlet H. Multimodal approach to control postoperative pathophysiology and rehabilitation. Br J Anaesth. 1997;78(5):606-17. doi: 10.1093/bja/78.5.606.
[3]. Khan S, Gatt M, Horgan A, Anderson I, MacFie J. Issues in Professional Practice: Guidelines for Implementation of Enhanced Recovery Protocols. 1st ed. Association of Surgeons of Great Britain and Ireland (ASGBI); 2009. [Internet]. Pdfs.semanticscholar.org. Available from: https://pdfs. semanticscholar.org/7960/2827d47ea07452ec326b4448 304dc 1bc8714.pdf. [Last cited on 2019 Dec 03].
[4]. Erassociety.org [Internet]. ERAS® society guidelines. Available from: https://erassociety.org/guidelines/ list-of-guidelines/. [Last cited on 2019 Nov 29].
[5]. Moulton LS, Evans PA, Starks I, Smith T. Pre-operative education prior to elective hip arthroplasty surgery improves postoperative outcome. Int Orthop 2015;39:1483-6
[6]. J.E. Aguilar-Nascimento, A.B. o.Saloma, C. Caporossi , Clinical benefits after the implementation of a multimodal perioperative protocol in elderly patients. Arq Gastroenterol;vol. 47,pp.178–183. 2010.
[7]. J. Ahmed, S. Khan, M. Lim , Enhanced recovery after surgery proto ols − omplian e and variations in practice during routine colorectal surgery. Int J Colorectal;vol. 14,pp.1045–1051 ,2012Alqahtani J. The prevalence of pterygium in Al-Khobar: A hospital-based study. Journal of Family and Community Medicine. 2013;20(3):159–61.

ISSN No:-2456-2165 https://doi.org/10.38124/ijisrt/25jul264

[8]. Andrew Yeh , Gabriella Butler , Stephen Strotmeyer , Kelly Austin , Mihaela Visoiu , Franklyn Cladis, MarcusMalek , ERAS protocol for pediatric laparoscopic cholecystectomy promotes safe and early discharge ,Journal of Pediatric Surgery;vol. 55 ,pp. 96–100,2020.
[9]. Sushil Bhogawar, Ashok Kumar Singh comparative analysis between eras and conventional care in laparoscopic cholecystectomy int j acad med pharm 2022; 4 (4); 136-138
[10]. B Praveen Kumar1, S vinoth Kumar2, Comparison of Enhanced Recovery After Surgery (ERAS) Protocol versus Conventional Approach for Laparoscopic Cholecystectomy: An Interventional Study Journal of Clinical and Diagnostic Research. 2024 Apr, Vol-18(4): PC15-PC18
[11]. R.K.Kamel, M.M.Abdelwahab Enhanced recovery after surgery programs versus traditional perioperative care in laparoscopic and open cholecystectomy Benha Journal of Applied Sciences (BJAS) Vol.(6) Issue(3) Part (1) (2021), (83-91)
[12]. Udayasankar M, Udupi S, Shenoy A. Comparison of perioperative patient comfort with ‘enhanced recovery after surgery (ERAS) approach’ versus ‘traditional approach’ for elective laparoscopic cholecystectomy. Indian J Anaesth 2020;64:316-21.