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Original article

Enhanced Recovery after Elective Cesarean section Delivery Protocol: A Randomized Controlled Clinical Trial

Mohamed El-bakryLashin, Ahmed Ashraf Gomaa Mohamed Salem, Ahlam Ahmed Mohamed Basha, Ahmed MohamedAbdAlkader
Obstetrics & Gynecology Department, Faculty of Medicine Zagazig University, Egypt

***Corresponding author:**
Ahmed Ashraf Gomaa Mohamed Salem

Email:
1ahmedashraf95@gmail.com,

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ABSTRACT:

Background: Enhanced recovery after surgery By combining various evidence-based perioperative care components, ERAS aims to expedite patient recovery. It standardizes perioperative management and produces a consistent improvement in the quality of care. The aim of the research was to investigate the effects of better recovery after CS on patient satisfaction, pain management, length of hospital stay, rate of complications, and rate of hospital readmission.

Methods: This randomized controlled clinical trial was conducted at Obstetrics and Gynecology department, Zagazig University Hospitals, included 90 patients who were divided into two groups: Active (ERCS) Group were subjected to our enhanced recovery program after surgery for CS regarding specific preoperative, intra operative and post operative measures (ERCS) (ERCS PG breech subgroup and ERCS previous 1 CS subgroup) and Control Group were subjected to the routine measures of any case of cesarean section regarding admission to hospital, preoperative, intra operative and postoperative routine measures (Control PG breech subgroup and control previous 1 CS subgroup).

Results: There was statistically significant difference between the studied groups as regard length of hospital stay, pain management, patient satisfaction, complication rate and readmission.

Conclusions: The integration of ERAS protocols into cesarean section surgery represents a substantial advancement in obstetric care. By significantly reducing hospital stays, optimizing pain management, and decreasing complication rates without increasing readmissions, ERAS enhances the overall recovery experience for patients. Continued research and refinement of these protocols will ensure their effectiveness and promote the adoption of best practices in cesarean section surgery care.

Keywords: Enhanced Recovery Protocol; Elective Cesarean Section Delivery; Enhancing Recovery Following Surgery

INTRODUCTION

Worldwide, cesarean sections (CS) are the most common operation. There is proof that, in several different countries, an increasing percentage of scheduled or elective treatments account for all cases of CS [1].

One of the most contentious issues in maternal care has been the rise in CS rates around the world. Since CS is a major surgical procedure, there are considerable risks associated with both morbidity and mortality. To speed up recovery and enhance outcomes for the mother and the child, a thorough plan must be developed and put into action for CS [2].

It is not a fresh idea to have an enhanced recuperation program following elective surgery. Enhanced recovery attempts to improve patient care in several areas to speed up recovery and allow for earlier discharge without sacrificing patient

satisfaction or the quality of care [3].

Even though other specialties like gynecology, urology, and orthopedics have all demonstrated that the implementation of enhanced recovery programs results in benefits like reduced morbidity, reduced length of stay, and earlier return to normal activities for patients, a significant portion of the research establishing the advantages of enhanced recovery focused on patients undergoing colorectal surgery [4].

The government's recommendation is in support of letting patients return home the day following a cesarean section. The National Institute for Health and Care Excellence in the UK states that early discharge from the hospital after 24 hours and follow-up care at home should be provided to women who are healing well, are apyrexic, and are not experiencing any complications after CS because these measures have not been associated with an increase in readmissions of mothers and babies [5].

Enhancing Recovery After Surgery (ERAS) aims to return the patient's quality of life to normal. The ERAS protocol includes a preoperative carbohydrate load, expeditious urinary catheter removal, prevention of postoperative gastrointestinal disturbance, standardized multimood intravenous fluids, and effective patient education and acceptance. Its goal is to improve recovery from the surgical catabolic and inflammatory response [6].

The interdisciplinary approach must be supported by all stakeholders involved in the patient's perioperative care, including obstetricians, anesthesiologists, nurses, social workers, and hospital management [7].

METHODS:

This randomized controlled clinical trial was conductedat Zagazig University Hospitals, Obstetrics and Gynecology department, outpatient clinics.Approval was obtained from the Zagazig University Institutional Review Board (IRB number 11299-17-12-2023). An informed consent was taken from the included patients. The work described has been carried out in accordance with The The Helsinki Declaration is the World Medical Association's code of ethics for human experimentation.

Sample size:

Assuming the frequency of returns to regular activities was 50% vs 20% in intervention vs control group. At 80% power and 95% CI .the estimated sample will be 90 cases , 45 cases in each group.

Inclusion criteria:

The duration of hospital stay and complication rate of both the active and control groups were unaffected by any extraneous factors. 1. Simple pregnancy tests, 2. An equal proportion of cases in both groups with primary CS or prior scars; 3. Age matching (between 20 and 35 years old); 4. Parity matching and number of CS (PG, prior CS); 5. A similar CS indicator (Elective CS).

Exclusion criteria:

Not having any medical conditions that could have affected the length of hospital stay for the cases—such as diabetes, hypertension, heart problems, blood disorders, or multiple pregnancies as well as having CFMF.

There were two patient groups in this study: After CS surgery, the Active (ERCS) Group (N=45) underwent our enhanced recovery program, which included specific preoperative, intraoperative, and postoperative measures (ERCS) (ERCS PG breech group (N=10) and ERCS previous 1 CS group (N=35)). The Control Group (N=45) underwent the standard procedures for any cesarean section case, including admission to the hospital, preoperative, intraoperative, and postoperative procedures (control PG breech group (N=10) and control previous 1 CS group (N=35)).

Every patient that was part of this study underwent the following thorough physical examination and taking of their medical history.

Active group of cases of ERCS were subjected to:-

a) Pre-operative measures :-

In outpatient clinics, patients were chosen and given the option of an accelerated healing procedure when deciding to have a Cesarean section. Every patient had their Hb level examined while scheduling a cesarean section; those with a level more than 10.5 gm/dl were included. If less than that, the patient would be delayed until the anemia was corrected. The patient arrived at the hospital the day before the procedure. Contact the patient over the phone the day before the procedure to provide instruction and make the necessary preparations: The night before CS, patients were instructed to fast for six to eight hours before eating solids and were encouraged to drink a lot of clear fluids. In particular, they were advised to consume high-carb drinks up to two hours before surgery in order to minimize hunger, thirst, and anxiety before the abdominal procedure **[8].**All patients were adviced to take 1 gm of paracetamol and Antacids as famotidine at home on the day of their operation.

b) Intra-operative measures :

All patients received a single dose of spinal anesthesia by administering 2.5 mg of midazolam two to three minutes prior to spinal anesthesia. using ephidrine infusion to treat hypotension brought on by anesthesia. Before having their skin incisions, all patients received 2 gm of Cefotaxime and Metronidazole. After a cesarean delivery, nausea and vomiting are frequently experienced. **[9].**As a pre-operative antiemetic, all patients in the ERAS protocol received metoclopramide. Patients who continued to have vomiting after taking metoclopramide were treated with a combination of medicines such as ondansetron and dexamethasone. To stop postpartum bleeding, a low dose of oxytocin infusion (15U/hour) was administered after the baby was delivered. This low dose also decreased the risk of side effects such hypotension and MI. Reducing the risk of surgical wound infection, coagulopathy, blood loss, and the need for transfusions requires maintaining perioperative normothermia**[10].**In Our ERAS protocol, In our situations, hypothermia was prevented by warming the IV fluids that the patients received. There was no peritoneal or stomach tube insertion. For each patient, subcutaneous wound closure was performed. Every patient had a transversus abdominis plane (TAP) block. Following surgery, all patients received a 200 mg rectal dose of diclofenac.

Optimizing of neonatal condition:

Delay in cord clamping is crucial in ERAS for at least 30 seconds since it lowers the risk of intraventricular hemorrhage and raises the hematocrite of newborns. Promote skin-to-skin interaction. Skin-to-skin contact reduces postpartum sadness and anxiety in mothers and increases breastfeeding rates and duration **[11].**All babies were checked by a neonatologist to ensure that all babies are good and avoid any bad condition that can prolong stay in hospital.

c) Post-operative measures:

Early oral intakewas initiated after two hours, and semisolid meals came in six. To promote early mobilization, NSAIDs and opioids were given to every patient in ERAS after surgery. Opioids were administered to patients as 2 cm / 3h, with Nalbuphine HCL 20 mg /1ml. Patients received one NSAIDS tablet every eight hours in the form of paracetamol. Urinary catheter removed as soon as the patient's legs touch the ground.**Early mobilization**, to improve pulmonary function, tissue oxygenation, reduce risk of thromboembolism and shorten length of stay **[12].**All patients were encouraged to early breastfeeding their babies.

Patient satisfaction was assessed by a questionnaire involved 8 questions that seemed directly relevant to surgical satisfaction.

d) Prior to discharge

Date: _____/_____/_____

Name: _____

Surgical Satisfaction Questionnaire
SSQ-8

Instructions: Following are a list of questions about your satisfaction with your surgery. All information is strictly confidential. Your confidential answers will be used only to help doctors understand and improve what is important to patients before, during and after surgery. Please check the box that best answers the question for you. Thank you for your help.

1. How satisfied are you with how your pain was controlled in the hospital after surgery?
☐ Very Satisfied ☐ Satisfied ☐ Neutral ☐ Unsatisfied ☐ Very unsatisfied

2. How satisfied are you with how your pain was controlled when you returned home after surgery?
☐ Very Satisfied ☐ Satisfied ☐ Neutral ☐ Unsatisfied ☐ Very unsatisfied

3. How satisfied are you with the amount of time it took for you to return to your daily activities, for example housework or social activities outside the home?
☐ Very Satisfied ☐ Satisfied ☐ Neutral ☐ Unsatisfied ☐ Very unsatisfied

4. How satisfied are you with the amount of time it took for you to return to work?
☐ Very Satisfied ☐ Satisfied ☐ Neutral ☐ Unsatisfied ☐ Very unsatisfied ☐ N/A

5. How satisfied are you with the amount of time it took for you to return to your normal exercise routine?
☐ Very Satisfied ☐ Satisfied ☐ Neutral ☐ Unsatisfied ☐ Very unsatisfied ☐ N/A

6. How satisfied are you with the results for your surgery?
☐ Very Satisfied ☐ Satisfied ☐ Neutral ☐ Unsatisfied ☐ Very unsatisfied

7. Looking back, if you "had to do it all over again" would you have the surgery again?
☐ Yes ☐ Maybe (probably yes) ☐ Unsure ☐ Don't think so ☐ Never

8. Would you recommend this surgery to someone else?
☐ Yes ☐ Maybe (probably yes) ☐ Unsure ☐ Don't think so ☐ Never

All patients were counselled about symptoms and signs of infections and ensure a mean of communication with us & telephone numbers were given.

Follow up:

Contact with patients were made by telephone number & regular visits in outpatient clinics to find the effect of our ERAS protocol.

Data analysis

Version 25 of the SPSS program (Statistical Package for Social Sciences) was used to code, tabulate, and statistically analyze the data that had been gathered. For numerical data, descriptive statistics were calculated using the mean, standard deviation, minimum and maximum values in the range, and for categorical data, they were calculated using the number and percentage. Quantitative information across the two groups was analyzed using an independent sample t test, while quantitative information within each group was analyzed using a paired sample t test. To compare the qualitative data between the active group and the control group, the Chi-square test was employed. At P-value<0.05, it was deemed statistically significant.

RESULTS:

There were no statistically significant differences between the studied groups as regard age (years), BMI (Kg/m^2),Residence and occupation (p>0.05) (Table 1).This table shows that there was no statistically significant difference between the studied groups as regard CS indications (p>0.05) (Table 2).

There was statistically significant difference between the studied groups as regard length of hospital stay (hours) (p<0.05).ERCS PG breech group showed shorter mean value of hospital stay as it was about 6 hours compared with about (10.5 ± 0.5) hours in Control PG breech group. ERCS previous 1 CS group showed shorter mean value of hospital stay as it was about (5.5 ± 0.5) hours compared with about (10 ± 1) hours in Control previous 1 CS group (Table 3).

This table shows that there was statistically significant difference between the studied groups as regard pain management (p<0.05).Pain control & adequate analgesia are better in ERCS PG breech and ERCS previous 1 CS groups as about 90% and 74.28% respectively of cases were able to remove urinary catheter early and ambulate early compared with only 10% and 14.28% respectively of cases in control PG breech group and control previous 1 CS group, also post CS spinal induced headache, nausea & vomiting are lower in ERCS PG breech and ERCS previous 1 CS groups (Table 4).

There was statistically significant difference between the studied groups regarding patient satisfaction(p<0.05).Patient satisfaction among cases of ERCS PG breech and ERCS previous 1 CS groups is more than it in control group, ERCS cases felt better to go home, return to their regular activities & that decreased post CS maternal anxiety & depression in ERS than in the control group, P value < 0,05 (Table 5).

There was statistically significant difference between the studied groups regarding complication rate (p<0.05).Complications occurred were wound infection that occurred in 1 case (2.85%) of ERCS previous 1 CS group compared with 4 cases (11.42%) of the control previous 1 CS group (p-value is 0.022), delayed return of bowel functions occurred in 1 case of the ERCS previous 1 CS group (2.85%) compared with 2 cases in the control previous 1 CS group (5.71%) with p- value =0.024 (Table 6).

There was statistically significant difference between the studied groups regarding readmission (p<0.05).From complicated cases 1 case only in the ERCS group needed hospital readmission (2.85%) compared with 3 cases (6.67%) in the control group involving 1(10%) in Control PG breech group and 2(5.71%) in Control previous 1 CS group (Table 7).

Table (1): Basic s characteristics of the studied groups:

Variable	Group I (ERCS) (n=45)	Group II (Control) (n=45)	Tests	
			t	*P* value
Age (years) Mean ± SD Range	27.66 ± 4.34 (23-33)	29.93 ± 4.63 (20-35)	0.364	0.696
BMI (Kg/m^2) Mean ± SD Range	28.12 ± 2.15 (25-30)	27.43 ± 3.11 (25-30)	0.412	0.713

		Group I	Group II	Tests	
Variable				**x^2**	**P value**
Residence	**Urban** **Rural**	16 (35.5%) 29 (64.5%)	13 (28.9%) 32 (71.1%)	0.499	0.952
Occupation	**Housewife** **Employee**	42 (93.33) 3 (6.67%)	44 (97.78%) 1 (2.22%)	0.412	0.854

*(X^2) chi-square test, (*t)* Independent t-Test, *Group I: Active (ERCS) group, Group II: Control Group

Table (2): Distribution of the studied groups as regard CS indications:

Variable	**Group I (ERCS) (n=45)**	**Group II (Control) (n=45)**	**Tests**	
			x^2	***P* value**
PG breech	10 (22.23 %)	10 (22.23 %)	0.398	0.876
Previous 1 CS	35 (77.77 %)	35 (77.77 %)		

* (X^2) chi-square test, *Group I: Active (ERCS) group, Group II: Control Group.

Table (3): Comparison between the studied groups regarding length of hospital stay **(hours):**

Variable	**Group I (ERCS) (n=45)**		**Group II (Control) (n=45)**		**Tests**		**Post hoc**
	PG breech (n=10)	**Previous 1 CS (n=35)**	**PG breech (n=10)**	**Previous 1 CS (n=35)**	***t***	***P* value**	
Length of hospital stay (hours) Mean ± SD Range	6.00 ± 0.00	5.5 ± 0.5 (5-6)	10.5 ± 0.5 (10-11)	10 ± 1 (9-11)	0.245	0.018*	P1=0.020* P2=0.022*

*(t): Independent t-Test, P= ERCS group Vs Control group, P1= ERCS PG breech group Vs Control PG breech group, P2= ERCS previous 1 CS Control previous 1 CS group.

Table (4): Comparison between the studied groups regarding pain management:

Pain management	**Group I (ERCS) (n=45)**		**Group II (Control) (n=45)**		**Tests**		**Post hoc**
	PG breech (n=10)	**Previous 1 CS (n=35)**	**PG breech (n=10)**	**Previous 1 CS (n=35)**	**x^2**	***P* value**	
Post CS headache	0.00	2 (5.71%)	4 (40%)	13 (37.14%)	0.123	P<0.001	P1<0.001 P2<0.001
Post CS nausea &vomiting	0.00	1(2.85%)	1(10%)	4 (11.42%)			P1<0.001 P2<0.001
Post CS early removal of urinary catheter	9 (90%)	26 (74.28%)	1(10%)	5(14.28%)			P1<0.001 P2<0.001
Post CS early ambulation (within 2 hours post operative)	9 (90%)	26 (74.28%)	1(10%)	5(14.28%)			P1<0.001 P2<0.001

* (X^2) chi-square test, P= ERCS group Vs Control group, P1= ERCS PG breech group Vs Control PG breech group, P2= ERCS previous 1 CS Control previous 1 CS group.

Table (5): Patient satisfaction among studied groups:

Patient satisfaction	Group I (ERCS) (n=45)		Group II (Control) (n=45)		Tests		Post hoc
	PG breech (n=10)	Previous 1 CS (n=35)	PG breech (n=10)	Previous 1 CS (n=35)	x^2	*P* value	
Post CS maternal anxiety	0.00	1 (2.85%)	1 (10%)	2 (5.71%)	0.250	P=0.027	P1=0.019 P2=0.024
Feeling safe to go home in the same day after CS	8(80%)	30(85.7%)	3(30%)	20 (66.67%)	0.095	P<0.001	P1=0.019 P2=0.022
Return to regular life activities after discharge	9 (90%)	26 (74.28%)	2(20%)	5(14.28%)			P1<0.001 P2<0.001

* (X^2) chi-square test, P= ERCS group Vs Control group, P1= ERCS PG breech group Vs Control PG breech group, P2= ERCS previous 1 CS Control previous 1 CS group.

Table (6): Comparison between the studied groups regarding complication rate:

Complication rate	Group I (ERCS) (n=45)		Group II (Control) (n=45)		Tests		Post hoc
	PG breech (n=10)	Previous 1 CS (n=35)	PG breech (n=10)	Previous 1 CS (n=35)	x^2	*P* value	
Wound infection	0.00	1(2.85%)	1(10%)	4(11.42%)	0.095	P=0.003	P1=0.019 P2=0.022
Delayed return of bowel function	0.00	1(2.85%)	1(10%)	2(5.71%)			P1=0.019 P2=0.024

* (X^2) chi-square test, P= ERCS group Vs Control group, P1= ERCS PG breech group Vs Control PG breech group, P2= ERCS previous 1 CS Control previous 1 CS group.

Table (7): Comparison between the studied groups regarding return to hospital rate:

	Group I (ERCS) (n=45)		Group II (Control) (n=45)		Tests		Post hoc
	PG breech (n=10)	Previous 1 CS (n=35)	PG breech (n=10)	Previous 1 CS (n=35)	x^2	*P* value	
Return to hospital rate (re admission)	0.00	1(2.85%)	1(10%)	2(5.71%)	0.190	P=0.019	P1=0.019 P2=0.024

* (X^2) chi-square test, P= ERCS group Vs Control group, P1= ERCS PG breech group Vs Control PG breech group, P2= ERCS previous 1 CS Control previous 1 CS group.

DISCUSSION:

ERAS procedures aim to minimize surgical complications and promote early recovery through the integration of multimodal evidence-based tactics with traditional perioperative techniques. These protocols, or strategies, must be implemented with a committed and well-coordinated team in order to facilitate an early discharge and so shorten hospital stays. The idea of enhancing recovery from the surgical catabolic and inflammatory response is ingrained in the ERAS pathways. This includes elements like reducing the amount of time patients fast before surgery, offering a preoperative carbohydrate load, offering standardized multimodal pain management, and initiating early postoperative mobilization and feeding [13].

A number of surgical settings, such as colorectal, bariatric, and gynecologic operations; hip and knee

replacements; and, most recently, cesarean deliveries, have implemented improved recovery after surgery routes. It has been demonstrated that these paths improve patient care quality while dramatically lowering hospital mortality, expenses, and length of stay [14].

Egypt came in third place in the world with an expected 51.8% of births via cesarean section in 2014 and 72.2% in 2021. The principal objective of an ERAS pathway is to mitigate the perioperative period's reaction to surgical stress by optimizing patient care. This necessitates the collaboration of multidisciplinary teams of specialists. While every ERAS program is different, most of them minimize preoperative fasting, provide tailored fluid management, use opioid-sparing analgesia, perform minimally invasive surgery, and allow for early postoperative food and ambulation in order to achieve this goal.

A quicker recovery to the patient's preoperative functional level is made possible by these elements [15].

This study sought to determine how improved recovery following computerized surgery affected hospital stay duration, pain management, patient satisfaction, rate of complications, and rate of hospital readmission.

Regarding age, BMI, and CS indications, we discovered that there were no statistically significant differences between the groups under investigation in the current study. Given that their age, parity, and number of CS were matched, neither the active nor the control groups had any extra variables that could have affected their length of hospital stay or rate of complications. Comparable CS indications were found.

Ganeriwal et al. [16]observed that among nulliparous women, the rate of cesarean sections rose dramatically with increasing maternal age and BMI. For women under 20 years old with a BMI under 18.5, the CS rate was 8.8%; for women over 45 years old, it was 76–100%.

We discovered in this study that there was a statistically significant difference in the length of hospital stay (hours) between the groups under investigation. In comparison to the Control PG breech group, which had a mean hospital stay of around 10.5 hours, the ERCS PG breech group's mean hospital stay was approximately 6 hours. The mean length of hospital stay for the ERCS previous 1 CS group was less than that of the Control previous 1 CS group, at roughly 5.5 hours.

In agreement with our findings, **Crandon et al. [17]** demonstrated that, when compared to conventional care, improved recovery after cesarean (ERAC) was linked to a shorter hospital stay. **Pan et al. [18]** shown that, in comparison to the conventional treatment, the ERAC protocol led to a noticeably shorter hospital stay. According to Gupta et al. [19], hospital stays were much shorter under the ERAC procedure than under the standard protocol. In comparison to standard treatment, Teigen et al.'s [20] research showed that ERAS was linked to a marginally but statistically significantly shorter postoperative duration of stay. According to Rousseau et al. [21], patients who received the accelerated recovery treatment spent an average of much less time in the hospital (3,92 days vs 4,34 days) than those who received the usual treatment.

According to our current research, there was a statistically significant difference in pain management across the groups under study. In addition, post-CS spinal induced headache, nausea, and vomiting are lower in ERCS PG breech and ERCS previous 1 CS groups. Pain control and adequate analgesia were better in these groups, as evidenced by the fact that approximately 90% and 74.28%, respectively, of cases were able to remove urinary catheter and ambulate early, compared with only 10% and 14.28%, respectively, of cases in the control PG breech group and control previous 1 CS group.

These results were compatible with **Pan et al. [18]** who illustrated that ERAS group had significantly fewer patients with intraoperative nausea and lower pain scores compared to the control group. **Mostafa et al. [22]** found that, in comparison to the control group, patients in the ERAS group experienced much lower rates of nausea and vomiting during and after surgery. Additionally, earlier ambulation and a quicker return of intestinal motility were encouraged by ERAS treatments. Significantly lower pain scores and a decreased requirement for opioid painkillers were observed in the ERAS group. **Ruymann et al. [23]** claimed that the usage of postoperative opioids was significantly reduced when an ERAS pathway for cesarean birth was put in place. Of the patients who needed opioids before ERAS, just 26% did so during the postoperative recovery phase. The ERAS pathway for postoperative days was associated with a decrease in the median patient-reported pain scores.

Sultan et al. [15] discovered that ERAS was linked to shorter times for initial mobilization, urine

catheter removal, and painkiller use. Abdelrazik & Sanad [24] demonstrated how an essential component of ERAS is early mobilization. Early mobilization reduces pulmonary problems, avoids muscle mass loss, lowers insulin resistance, and improves bowel function, according to research combining traditional instruction with improvisation. Furthermore, delayed mobilization is linked to a higher risk of thromboembolism and a reduction in the amount of oxygen delivered to organs. Nevertheless, there aren't any RCTs available right now that demonstrate better postoperative outcomes arise from early mobilization. According to an analysis of ERAS, failing to mobilize is linked to an extended duration of stay, indicating that early mobilization is essential to achieving the positive outcomes of ERAS protocols.

The current study discovered a statistically significant difference in patient satisfaction across the groups under investigation. In comparison to the control group, patient satisfaction was higher in the ERCS PG breech and ERCS prior 1 CS groups. ERCS cases reported feeling better about returning home and to their regular activities, and there was a decrease in post-CS maternal anxiety and depression in ERS.

This was in accordance with **Pravina&Tewary[25]** who stated that, in comparison to the control group, patients in the ERAS group had far higher satisfaction scores. **Liu et al. [26]** claimed that at discharge, participants in the ERAS group reported much greater levels of overall satisfaction than those in the control group. A shorter duration of stay following surgery, absorbable skin sutures, age, PONV, and VAS score were all independent predictors of greater overall patient satisfaction. According to Jani et al. [27], the ERAS group had considerably improved compliance with oral carbohydrate intake during the pre-operative phase and was able to begin oral feeding within 6 hours. At the 2-week follow-up, the ERAS group exhibited considerably reduced expenses and higher overall patient satisfaction than the control group.

The current investigation discovered a statistically significant difference in the complication rate between the groups under examination. Wound infections occurred in 1 case (2.85%) of the ERCS previous 1 CS group compared to 4 cases (11.42%) of the control previous 1 CS group (p-value is 0.022). Additionally, 1 case (2.85%) of the ERCS previous 1 CS group experienced a delayed return of bowel functions compared to 2 cases (5.71%) in the control previous 1 CS group.

Our findings were supported by those obtained by **Pravina&Tewary[25]** Researchers found that, while the changes were not statistically significant, the ERAS group had decreased incidence of postoperative problems such stitch line pain and discharge. According to Persson et al. [28], there were no appreciable variations in the patient demographics or serious side effects between the ERAS and non-ERAS groups. According to Elgohary et al. [29], there was a noteworthy distinction in the proportion of patients who experienced flatus on the first postoperative day, suggesting that patients in the ERAS group recovered their bowel function more quickly.

Across a range of surgical procedures, Enhanced Recovery After Surgery (ERAS) protocols have demonstrated notable benefits. According to Li et al. [30], ERAS shortened hospital stays, surgical site infections, and postoperative complications in colorectal surgery. The use of ERAS led to shorter hospital stays, better pain management, and fewer problems without increasing readmissions, according to Ali et al. [31], who were cleared for elective caesarean sections. The accelerated recovery strategy did not raise the overall rate of complications, according to Rousseau et al. [21], with the exception of a higher rate of acute urine retention that was quickly addressed.

According to our current research, there was a statistically significant difference in readmission between the groups under study. Out of the complex cases, just one case (2.85%) in the ERCS group required a hospital readmission, while three instances (6.67%) in the control group did. This indicates that ERAS was successful in delivering appropriate quality in the shortest amount of time. Persson et al. [28] reported that in comparison to the non-ERAS group, the ERAS group saw a considerably quicker time to first bowel movement and decreased readmission rates. According to Sultan et al. [15], ERAS had no discernible impact on the rates of readmissions of mothers to hospitals after their release. **Meng et al. [32]** came to the conclusion that ERAS deployment lowers rather than increases the readmission rate.

CONCLUSION

Obstetric care has advanced significantly with the use of ERAS guidelines during cesarean section procedures. ERAS improves patients' overall

recovery experience by lowering hospital stays, improving pain management, and lowering complication rates without raising readmission rates. The success of these guidelines will be ensured by ongoing study and improvement, which will also encourage the adoption of best practices in the care of patients undergoing cesarean sections.

Conflict of interest: None

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