

Determination of the Effectiveness of Enhanced Recovery after Surgery Protocols in Patients Undergoing Emergency Laparotomies

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Abstract

Introduction: Enhanced Recovery after Surgery (ERAS) protocol is a combination of evidence-based perioperative strategies which work synergistically to expedite recovery after surgery.

Aim: To compare the post-operative recovery rate using ERAS and Institutional standard protocol.

Materials and Methods: A prospective case-control study was conducted to compare the recovery rate of ERAS protocol with institutional standard protocol.

Results: A total of 25 patients in each group, Group A undergo institutional standard protocol and Group B in ERAS protocol method. When compared with Group A, the patients in Group B shown normal bowel movement in 3.44 days, duration of hospital stay was 7.88 days, pain score was 2.08 which is better than Group A.

Conclusion: ERAS protocol has shown earlier post-operative recovery rate than institutional standard protocol.

Key words: Enhanced Recovery after Surgery, Enhanced recovery, Postoperative care, Fast track protocol

INTRODUCTION

Recent efforts to improve the patient outcomes and in reducing the hospital of the patients focus mainly on enhancing the post-operative recovery with a multimodal approach. The concept of fast-track surgery, which is also called enhanced recovery after surgery (ERAS) or multimodal surgery involves the usage of various strategies to enable better conditions for surgery and recovery to achieve faster discharge from hospital and rapid resumption of normal activities after major surgical procedures without an increase in complications or readmissions. It facilitates an early return of bowel function.¹⁻⁴ Improved post-operative analgesic techniques and a better understanding

of perioperative care principles with early oral feeding and ambulation have resulted in enhanced post-operative recovery.⁵ The purpose of this integrated approach is mainly to reduce the psychological and physiological stresses associated with surgical illness, to reduce tissue catabolism, and enhancing recovery in a rapid way.⁶ Many studies have evaluated the effects of standard/conventional care and showed that many of the traditional approaches to surgical care, such as pre-operative bowel clearance, prolonged fasting, prolonged use of nasogastric tubes and drains placed in cavities, enforced bed rest, and the use of graduated diets are unnecessary or even harmful.^{7,8}

Aims

To compare the post-operative recovery rate using ERAS and institutional standard protocol.

MATERIALS AND METHODS

A prospective case-control study was conducted in Department of General Surgery, Government Rajaji

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Hospital Madurai. Ethics committee approval and informed consent were obtained. Patients from age 10-80 years admitted to general surgical wards with acute abdomen and planned for emergency laparotomy were screened. Patients undergoing re-laparotomies for acute abdomen and presenting with acute abdomen due to trauma are excluded from the study. Patients included in the study were undergone 2 methods of surgical procedure, Group A (Control) with Institutional standard procedure. Group B (Case) undergo ERAS protocol. Patients were randomized using randomization table to undergo recovery protocol. Patient's bowel movement, duration of hospital stay, and pain score were compared between the groups. Data were analyzed using Student's *t*-test in SPSS 11 software.

RESULTS

A total of 50 patients were recruited, 25 in Group A and 25 in Group B, gender distribution were as follows: There were 14 males and 11 female under cases and 18 males and 7 females under controls. The more patients are in age group 41-50 years (Table 1).

In Group A, patients with duodenal perforation are high (20%) followed by small bowel perforation (16%), Group B - duodenal perforation was high (28%) followed by small bowel perforation and gastric perforation (16%) (Tables 2 and 3).

The mean day of return of bowel function was compared in Groups A and B; Group B was 3.44 days and among the Group A were 4.76. There is a significant difference in the mean day of return of bowel function ($P < 0.0001$) which shows ERAS protocol is better in return of bowel functions (Table 4).

Total days of hospital stay in Group A 10.56 days and Group B 7.88 days. The mean difference of 2.68 with $P < 0.0001$ shown that Group B is better than Group A (Table 5).

Pain score, Group B shown less pain score than Group A with statistical difference $P < 0.0001$ (Table 5).

DISCUSSION

In the study, the patients undergoing emergency laparotomy are subjected to various components of ERAS which involves Pre-operative criteria's like pre-operative counselling, carbohydrate loading, antibiotic prophylaxis, avoidance of mechanical bowel preparation, intraoperative

Table 1: Distribution of age study patients and study groups

Age group	Patients	Group A	Group B
10-20	7	6	1
21-30	4	1	3
31-40	11	5	6
41-50	15	7	8
51-60	3	3	0
61-70	8	3	5
71-80	2	0	1

Table 2: Distribution of diagnosis

Diagnosis	Group A (%)	Diagnosis	Group B (%)
Abdominal TB	4	Appendicular perforation	8
Appendicular perforation	12	Duodenal perforation	28
Duodenal perforation	20	Gastric perforation	16
Gastric perforation	12	Large bowel gangrene	4
Incision hernia with burst abdomen and bowel prolapse	4	Liver abscess	4
Large bowel perforation	4	Obstructed incisional hernia	8
Ruptured liver abscess	4	Obstructed spigelian hernia	4
Sealed perforation	8	Small bowel gangrene	4
Small and large bowel gangrene	4	Small bowel obstruction	8
Small bowel gangrene	8	Small bowel perforation	16
Small bowel perforation	16		
Uterine perforation	4		

Table 3: Comparison of days of return of bowel function

Group	Days of return of bowel function	
	Mean±SD	P
Group A	4.76±0.723	<0.0001
Group B	3.44±0.712	

Table 4: Comparison of days of hospital stay

Group	Hospital stay	
	Mean±SD	P
Group A	10.56±0.821	<0.0001
Group B	7.88±1.764	

Table 5: Comparison of pain score in study groups

Group	Pain score	
	Mean±SD	P
Group A	3.12±1.2	<0.0001
Group B	2.08±1.07	

and post-operative maintenance of body temperature, post-operative components such as early mobilization, early initiation of diet, early removal of nasogastric tubes, and early removal of abdominal drains and usage of NSAIDs and paracetamol for pain relief and usage of opioid analgesics only for rescue analgesia.⁹⁻¹³ A similar analysis was done previously in colorectal and urological surgeries and was found to be effective in enhancing the recovery rate.^{14,15} Bowel movement occurs quicker in patients undergone ERAS protocol than the institutional standard when compared with institutional standard protocol which is promising result to restore patient's normal bowel movement.¹⁶ ERAS protocol shown quicker discharge of patients than another group which is shown the similar result in other studies done.^{17,18} There is reduction in the pain score compared to control group which is also evident from the other study.¹⁹

CONCLUSION

ERAS protocol has shown earlier post-operative recovery rate than institutional standard protocol. Shorter recovery period not only decreases complications/morbidity of the surgery but also reduces the cost of surgery which is a significant factor in patient's point of view.

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