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ANALYSIS OF ENHANCED RECOVERYAFTER SURGERY IN PATIENTS WITH AND WITHOUT COMORBIDITIES

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Abstract

Background and Objective- An evidence-based multimodal perioperative regimen called Enhanced Recovery after Surgery (ERAS) focuses on stress reduction and the encouragement of a return to function. ERAS has been shown to reduce postoperative complication rates and recovery times while also being cost-effective. To compare the effects of Enhanced Recovery after surgery protocols in patients with and without comorbidities by reducing perioperative morbidity and duration of hospital stay. Methodology: This is a comparative study of interventions among 40 patients evaluated, diagnosed and further planned for surgery in department of general surgery and divided into study group A with 20 patients without comorbidities who underwent surgery and group B with 20 patients with comorbidities who underwent surgery. They were followed preoperatively, intraoperatively and postoperatively for length of hospital stay and peri-operative morbidity. The outcomes were compared between the two groups. Results- In the present study, among patients with Co-morbidities 35% belonged to 41-50 years, 60% belong to 51-60 years and 5% belong to 61-70 years. Among those without comorbidities, 5% belong to 31-40 years, 35% belong to 41-50 years, 50% belong to 51-60 years, 10% belong to 61-70 years age group. This observation was not statistically significant. Based on gender, 55% are male and 45% are female. Among those with comorbidities, 60% are male and 40% are female. This observation was not statistically significant. Without comorbidities, 20% had stay for 1-3 days, 60% had stay for 4-7 days and 20% had stay for 8-12 days. This observation was statistically significant. Conclusion- Duration of hospital stay in days, among those with comorbidities, 10% had stay for 4-7 days, 90% had stay for 8-12 days. Without comorbidities, 20% had stay for 1-3 days, 60% had stay for 4-7 days and 20% had stay for 8-12 days. A statistically significant difference between duration of hospital stay and comorbidities. Prolonged stay observed with comorbidities.

Keywords: Enhanced Recovery, ERAS, Length of Hospital Stay, Counselling, Early Mobilisation, Mechanical Bowel Preparation.

INTRODUCTION

An evidence-based multimodal perioperative regimen called Enhanced Recovery after Surgery (ERAS) focuses on stress reduction and the encouragement of a return to function. ERAS has been shown to reduce postoperative complication rates and recovery times while also being cost-effective. It radically changes the way that patient care is traditionally provided on surgical wards by standardising it and basing it on published research[1]. The ERAS protocol challenges conventional perioperative practises, such as prolonged fasting, physical restrictions, mechanical bowel

preparation, frequent use of drains, and the gradual return to regular food after surgery. It is hypothesised that avoiding such perioperative doctrine reduces the metabolic stress, fluid overload, and insulin resistance exerted on the body, shortening the length of hospitalisation. There is already mounting evidence that ERAS is helpful in a wide range of specialties, including colorectal, gastric, pancreatic, esophageal, and bariatric.[2]

Preoperative counselling, nutritional optimization, standardising analgesia without the use of opioids, reducing electrolyte and fluid imbalance, utilising the least invasive techniques, and encouraging early ambulation and feeding are the main goals of this treatment[3,4,5,6]. Stress causes the body to react physiologically in a catabolic way. This is mediated by the central nervous system, which causes the creation of a number of stress hormones and inflammatory mediators.

Numerous postoperative complications, including infections and cardiovascular issues, may result from this rise. Clear communication with patients before to surgery, starting with preoperative counselling, reduces anxiety, facilitates postoperative recovery and pain management, and increases adherence to the treatment plan, enabling an earlier recovery and discharge.[7]

Low molecular weight heparin (LMWH) has been demonstrated in meta-analyses to be just as beneficial as low-dose subcutaneous unfractionated heparin in lowering deep vein thrombosis, pulmonary embolism, and overall patient mortality. Due to its once-daily dose and lesser risk of heparin-induced thrombocytopenia, LMWH is preferred. According to research, prophylactic antibiotic use is an efficient way to prevent anaerobic and aerobic infections.[8]

Enhancing recovery after surgery (ERAS) is a multimodal surgical care route based on research that reduces postoperative complications and hospital stay in adults without diabetes or high blood pressure. The current study was carried out to examine the recovery rate of patients with and without co-morbidities who underwent surgery using Enhanced Recovery After Surgery Protocols, as well as the steps to improve patient quality of life by decreasing morbidity by reducing the patient's peri-operative hospital stay.

MATERIALS AND METHODS

It was a Prospective Cohort Study conducted between July 2020 to July 2022. Among all Patients admitted for undergoing surgery in VMKV hospital.

The total sample size was 40 Patients.

Inclusion criteria

1. Age limit: 20-80years.
2. All subjects suffering from
    a) Diabetes Mellitus.
    b) Hypertension.
    c) Dyslipidemia.
    d) Bronchial Asthma.
    e) Coronary Artery Disease.

Exclusion criteria

a) Patients with less than 2 follow-up during observation period.
b) Patient of age group less than 20 years and more than 80 years.
c) Patients presenting for Pregnancy and congenital disorders.
d) Patients present with pyschological Disorders.

METHODOLOGY

Pre-Operative Protocols of ERAS

1. Pre-admission Counselling.
2. Selective/No Bowel Preparation.
3. Pre-operative Fluid and carbohydrate loading.
4. Pre-anaesthetic medication avoidance.
5. Anti-microbial prophylaxis.
6. Pre-Operative physiotherapy and Incentive Spirometry.
7. Pre-Operative thromboprophylaxis

Intra-Operative Protocols of ERAS

1. Short acting anaesthetic protocol.
2. Epidural anaesthesia/Analgesia.
3. Avoiding intra-operative
4. hypothermia.
5. Avoidance of drains and lines.
6. Avoidance of Salt and Water overload

Post-Operative Protocols of ERAS

1. Early mobilization and oral intake.
2. No Nasogastric tubes.
3. Avoidance of Salt and Water overload.
4. Early removal of drains, lines and urinary catheter
5. Non-opioid analgesia/NSAIDs
6. Preventing and treating Post-op nausea and vomiting (PONV)

Statistical Analysis-

The study population's clinical and demographic features were compiled using descriptive statistics. The chi-square test and other suitable statistical tests were used in association analysis to investigate the associations between the variables. The statistical analysis was performed using SPSS for Windows version 22.0 software. The critical value of P indicating the probability of significant difference was taken as <0.05 for comparison.

RESULTS

Table 1: Age and Gender wise distribution

	With co morbidities		Without Co morbidities	
	N	%	N	%
31 – 40	0	0.0%	1	5.0%
41 – 50	7	35.0%	7	35.0%
51 – 60	12	60.0%	10	50.0%
61 – 70	1	5.0%	2	10.0%
Total	20	100%	20	100%
Chi square test= 1.51, p=0.67, Not statistically significant				

Table 1 shows distribution based on Age, among patients with Co-morbidities 35% belong to 41-50 years, 60% belong to 51-60 years and 5% belong to 61-70 years. Among those without comorbidities, 5% belong to 31-40 years, 35% belong to 41-50 years, 50% belong to 51-60 years, 10% belong to 61-70 years age group. This observation was not statistically significant. Distribution based on gender, among those with comorbidities, 55% are male and 45% are female. Among those with comorbidities, 60% are male and 40% are female. This observation was not statistically significant.

Table 2: Surgeries done

	With Comorbidities	Without Comorbidities	Total
Abdomino-Peritoneal Resection	3	2	5 (12.5%)
Anterioir Gasterojejunostomy	0	2	2 (5.0%)
Anterior Gastrojejunostomy	0	2	2 (5.0%)
Cyto reductive surgery	2	0	2 (5.0%)
Graham's Omental patching	2	0	2 (5.0%)
Left Hemimandiblectomy with Neck dissection	1	2	3 (7.5%)
Ileostomy	0	2	2 (5.0%)
Left Hemimandibulectomy with neck dissection	2	0	2 (5.0%)
Low Anterior Resection	1	0	1 (2.5%)
Radical Cholecystectomy	2	0	2 (5.0%)
Resection and anastamosis	1	4	5 (12.5%)
Right Hemicolectomy	2	2	4 (10.0%)
Right Modified Radical Mastectomy with Axillary node dissection	1	0	1 (2.5%)
Subtotal Gasterectomy with Gastrojejunostomy	2	0	2 (5.0%)
Total thyroidectomy	1	4	5 (12.5%)
Total	20	20	40 (100%)
Chi square test= 22.13, p=0.08, Not statistically significant			

As per table 2 the surgeries involved in ERAS protocols were updated but they were non-significant when comparison was done in co-morbid and without co-morbidities.

Table 3: Duration of Hospital Stay in days

	With co morbidities		Without Co morbidities	
	N	%	N	%
1 – 3 days	0	0.00%	4	20.00%
4 – 7 days	2	10.00%	12	60.00%
8 – 12 days	18	90.00%	4	20.00%
Total	20	100.00%	20	100.00%
Chi square test= 24.25, p=0.0001*, statistically significant				

Table 3 shows distribution based on duration of hospital stay in days, among those with comorbidities, 10% had stay for 4-7 days, 90% had stay for 8-12 days. Without comorbidities, 20% had stay for 1-3 days, 60% had stay for 4-7 days and 20% had stay for 8-12 days. This observation was statistically significant. No statistically significant difference observed with relation to duration of hospital stay and Age.

Table 4: Length of stay and Co morbidities

	Length of stay (Mean ± SD)
Diabetes	16.33 ±7.50
HTN	11.20 ±5.35
DM + HTN	14.40 ±4.11
Dyslipidemia	7±2.50
Bronchial Asthma	12±0.00
Hypothyroidism	10.5±3.50
ANOVA F value = 0.81, p= 0.50, Not statistically significant	

Table 4 shows distribution based on length of stay and comorbidities, the mean length of stay among diabetic was 16.33 ±7.50, among HTN was 11.20 ±5.35, among DM+HTN was 14.40 ±4.11, among Dyslipidemia was 7±2.50, among Bronchial Asthma was 12 ±0.00, among Hypothyroidism was 10.50 ±3.50. This observation was not statistically significant.

Table 5: Association between length of Hospital stay and Co morbidities

	With co morbidities	Without Co morbidities
Duration of hospital stay	13.70 ± 4.87	5.40 ±3.15
T test= 6.30, Mean difference = 8.30, p= 0.0001*, Statistically significant		

Table 5 shows distribution based on length of Hospital stay and Co morbidities, a statistically significant difference between duration of hospital stay and comorbidities. Prolonged stay observed with comorbidities. This observation was statistically significant.

Table 6: List of Complications

	With co morbidities		Without Co morbidities	
	N	%	N	%
Fistula	1	5.0%	0	0.0%
Anastomotic leak	0	0.0%	1	5.0%
EC Fistula	2	10.0%	0	0.0%
SSI	6	30.0%	1	5.0%
None	11	55.0%	18	90.0%
Total	20	100%	20	100%
Chi square test= 9.29, p=0.04*, statistically significant				

Table 6 shows distribution based on complications, among those with comorbidities, 5% had fistula, 10% had EC fistula, 30% had surgical site infection. Among those without comorbidities, 5% and anastomotic leak, 5% had SSI. This observation was statistically significant.

Figure 1- Complications

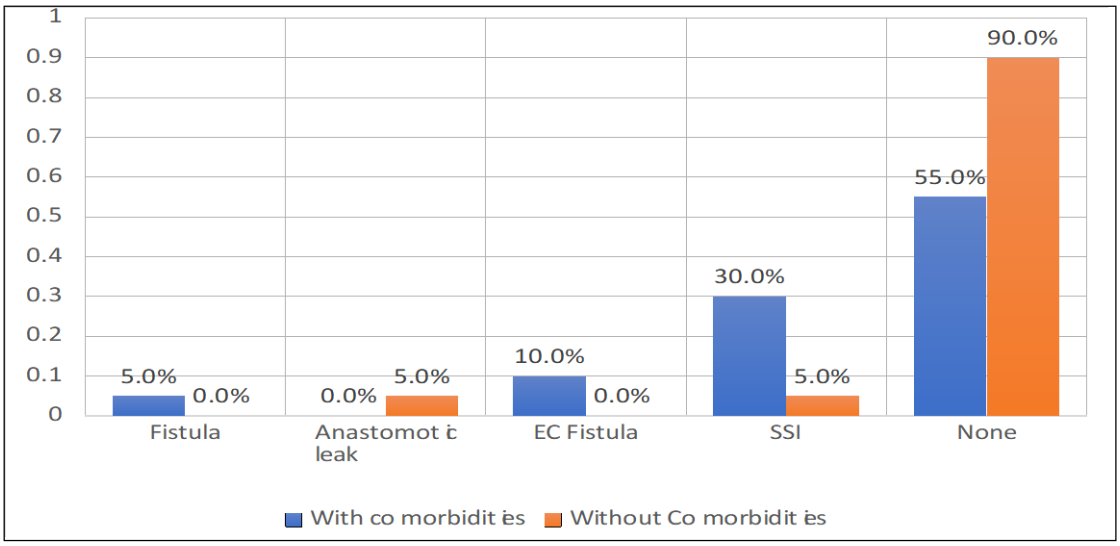

Figure 1: depicts list of complications suggests most common complication was SSI.

DISCUSSION

ERAS protocols are perioperative procedures intended to improve patient outcomes including preventing postoperative ileus, improving wound healing, and reducing perioperative stress, length of hospital stay, nausea, and pain at rest.

A systematic review reported that ERAS protocols may reduce time to return of gastrointestinal function in patients having gastrointestinal or colorectal surgery[9]

In the present study, among patients with Co-morbidities 35% belong to 41-50 years, 60% belong to 51-60 years and 5% belong to 61-70 years. Among those without comorbidities, 5% belong to 31-40 years, 35% belong to 41-50 years, 50% belong to 51-60 years, 10% belong to 61-70 years age group. This observation was not statistically significant.

A Cochrane review[10] reported that compared with placebo or fasting in analysis of 19 trials with 1,351 patients, preoperative carbohydrate treatment associated with shortened length of hospital stay (0.3 days, 95% CI 0.04-0.56) and no significant differences in postoperative return to intestinal function in 3 trials with 83 patients.

Based on small randomized trial[11]- 36 adults (aged 21-79 years) having elective colorectal resection were randomized to 1 of 3 groups. Precarb 100 g in 800 mL water on the night before surgery plus Vitajoule 50 g (48 g carbohydrate) in 400 mL water 3 hours before induction of anesthesia and water 800 mL on the night before surgery plus 400 mL 3 hours before induction of anesthesia. 6 patients had postoperative complications (2 in carbohydrate group, 3 in water group, and 1 in fasting group) comparing preoperative carbohydrate vs. water vs. fasting. This study concluded that

carbohydrate drink 3 hours before colorectal surgery associated with decreased postoperative ileus.

A systematic review[12] reported that perioperative NSAIDs might slightly increase risk of anastomotic dehiscence, but may also slightly decrease need for opioids and duration of ileus.

A randomised control trial[13] reported that perioperative celecoxib may be associated with decreased risk of ileus following major abdominal surgery. In their study compared to placebo, celecoxib associated with decreased risk of paralytic ileus ($p < 0.05$).

Based on a systematic review by Rollins et al[14] observed that goal-directed fluid therapy does not appear to reduce mortality or postoperative ileus but may reduce other postoperative morbidity compared to conventional fluid therapy in patients having elective major abdominal surgery.

In a Cochran review[15] on Prophylactic nasogastric decompression after abdominal surgery reported that selective nasogastric tube use associated with quicker return of postoperative bowel function compared to routine use.

In the present study a statistically significant difference between duration of hospital stay and comorbidities. Prolonged stay observed with comorbidities. This observation was statistically significant.

In a study conducted by Zi Chuan Ding et al[16] reported that the influence of comorbidities on LOS was shown to be limited in our multivariate regression model, which differed from the conclusion drawn from most previous studies.[17,18]

Le Mar and Whitehead reported that over 63% patients had at least one comorbidity in their cohort[19] and it was reported that over 65% of patients had at least five comorbidities in another study[20]. Furthermore, the mean age of this cohort was 54.8 years while it has been reported that the mean age of patients undergoing THA ranged from 64.7 to 71.0 years in western studies.[18-20]

CONCLUSION

In the present study Duration of hospital stay in days, among those with comorbidities, 10% had stay for 4-7 days, 90% had stay for 8-12 days. Without comorbidities, 20% had stay for 1-3 days, 60% had stay for 4-7 days and 20% had stay for 8-12 days. A statistically significant difference between duration of hospital stay and comorbidities. Prolonged stay observed with comorbidities. Among those without comorbidities, 5% had anastomotic leak.

Although growing evidence from several RCTs, systematic reviews and meta-analyses suggest significant benefits from ERAS pathways, there are still major difficulties when introducing these evidence-based guidelines into routine practice.

One of the most important aspects is the ERAS team, which includes pre-admission staff, dieticians, nurses, physiotherapists, social workers, occupational therapists and doctors. All team members must be familiar ERAS principles and be motivated to carry out the program; they must be able to overcome traditional concepts, teaching and attitudes towards perioperative care. In light of such compelling evidence, the evidence-based environment in which we practice demands that we review the perioperative management of radical cystectomy patients and alter it accordingly.

Conflict of Interest- None declared

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