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ANALYZING THE EFFECTIVENESS OF ENHANCED RECOVERY AFTER SURGERY (ERAS) PROTOCOLS IN GENERAL SURGICAL PATIENTS"

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Abstract

Objective: the main objective of study to evaluate the role of enhanced recovery after surgery (ERAS) protocols in optimizing surgical outcome and reducing hospital stay in general surgery

Methodology: This study was conducted at the Department of Surgery, Ayub Teaching Hospital, Abbottabad from June 2023 to June 2024. The study included 200 colorectal cancer patients who met the sample selection requirements. The patients were randomly divided into two the same groups, one of which got ERAS care and the other conventional management. The duration of each person in the hospital and the onset of SSI were documented. SPSS 26.0 was used to analyze the data.

Results Over all 200 patients divided into two groups were studied. Each sample mean age was of 42.34 +_14.45 in which 55% (n=110) were male and 45% (90) . 60% (n=120) patients had colon diseases while 40% (80) had rectal disease .The BMI of each was 27.76 +_3.31 kg/m2.and the pre surgery features are (presented in table 1) None of the variable showed statistical dissimilarities Overall of 49% (n=98) patient had done open surgeries and 51% (n=102) had laparoscopic surgery. A total number of 10% (n=20) patents were given stoma , in group A (10) and in group B (8) . Total operative mean time was (148.83 +-19.33) minutes which was not significant statistically through group (P =0.896). The average hospital period of individual was (5.96+-2.93) days and mean duration stay was 3.46+-1.74 day with ERAS and 8.24 +-1.57 days with conventional management (P =0.001). Surgical site infection developed in a total of 30% (n=60), in which 9% SSI occur in A group while 21% happened in group B (P = 0.031) while 70% had not (n =140) had not SSI. **Conclusion:** It has been shown that ERAS procedures are trustworthy, inexpensive, and secure. The duration of hospital stays and incidence of SSIs have both significantly decreased, which converts into less resource use and lower costs. To achieve the aforementioned advantages, however, full devotion to the procedure may be required. In order to encourage conversion to this management method, significant efforts must be made to make these protocols easier to apply and more attractive.

Keywords: ERAS, colorectal cancer, ,, colorectal surgery, surgical site infection, length of hospital stay, general Surgery

INTRODUCTION

Colorectal cancer ranks third among all malignancies in terms of cancer-related deaths worldwide [1]. It accounts for 10.2% of all cancer cases. The majority of incidents (90–95%) are sporadic and are often brought on by danger aspects such age, sex, too much fat consumption, obesity, liquor, extraordinary red meat consumption, smoking, and a absence of exercise [2,3].
The cornerstone of current healthcare therapy is evidence-based management, and colorectal cancer treatment is no different. in colorectal surgery ,however there is still a lot of procedures including preoperative bowel preparation, steady nasogastric tube usage, and nil by mouth guidelines until postoperative bowel noises heard [4,5].

After major colon surgery, factors including discomfort, extended immobility, and post-operative ileus might result in longer hospital stays and greater complication rates [6]. Surgical site infections (SSIs) have been linked to colorectal surgery at rates between 5% and 27%, with stomas, longer operating times, advanced American Society of Anesthesiologists (ASA) grades, wound infection, smoking, and weak immunity system having mainly high incidences [7]. The use of antibiotic before surgery, hair exclusion, skin antibacterial agent, preservation of normohermia, and tight glycemic maintenance are interferences that are consumed to reduce the prevalence of SSIs, with varied degrees of effectiveness [7]. In order to normalize patient perioperative treatment and improve surgical results, enhanced recovery after surgery (ERAS) procedures have been developed [7]. These procedures aim to reduce expenditures associated with healthcare as well as surgical stress reactions in patients, postoperative morbidity, mortality, duration of hospital stays, and patient views of the surgical experience [8].

In 2014, Meller TE et al. stated that the average duration of hospital admittance was reduced by ERAS to 5 days from seven days (P 0.001), but that t no change of frequency in SSIs (27% vs 36.3%, correspondingly; p = 0.16). [9]. According to R-Melcher J et al.'s paper , the average hospital admittance with ERAS was 10-11 days as contrasting to 13-17 days by conventional treatment (P = 0.034). But dissimilarity to Miller, the incidence of SSIs in the ERAS set was 3.4% as opposed to a occurrence of 11.6% in the standard treatment group (P 0.001) [10]. Terrifyingly recurrent colorectal cancer causes considerable morbidity and mortility as well as a huge burden Surgical procedure has a possible therapeutic function, unfortunately majority of peoples are in unhealthy condition do not respond well to this kind of treatment. Extended hospital stays worsen the condition.

This research aimed to evaluate the role of enhanced recovery after surgery protocols in optimizing surgical outcome and reducing hospital stay in general surgery

Materials and Methods

After getting informed permission from 200 patients who had been diagnosed with colorectal cancer, we performed a quasi-experimental research on them from June 2023 to June 2024 at the Department of Surgery, Ayub Teaching Hospital, Abbottabad. Once the necessary ethical approval had been obtained, patients were chosen via successive non-probability sampling. The sample size was determined using the WHO sample size calculator while maintaining the following test power (1-) of 100 percent , people SD of 1.735, [11]. The mean test value of population 8.5 [11], and [11] expected population average of 3.8 [11]. The research included samples with colorectal cancer who had elective surgery between the ages of 20 and 70. Right or left colectomies performed openly or laparoscopic ally, as well as subtotal colectomies, extraordinary anterior resections, , and intestinal perennial resections, were among the surgical procedures covered. Patients who had recently taken immunosuppressive medications, had active

infections, or had a illness of autoimmunity , recurrent colorectal cancer, heart disease, coagulopathies, or diabetes mellitus were omitted from the study. Next, a comprehensive history and physical examination were performed on each patient. The ERAS procedures were used to manage the samples in Group A [12]. Persons in Group B had colorectal surgery using standard procedures in accordance with institutional guidelines. Each doctor had a least of 5 years of colorectal surgery practice, and the same surgical team performed all of the procedures.

The ERAS procedures used include a carbohydrate-loading beverage 2 hours preceding to surgical treatment , fasting period (at least 6 hours for solids and 2 hours for fluids), early enteral nourishing, early removal of urinary catheters, nasogastric tubes, and gravity drains, an opioid-free analgesic, early mobilization, and thromboprophylaxis. According to institutional policy, the standard protocols call for delayed enteral feeding resumption, lengthy fasting times (at least eight hours), until fluid levels are below 50 ml keeping abdominal drains in place, sufficient painkiller, , and pre-operative bowel arrangements (lax food starting three days before to surgery then fluid sixteen hours earlier to surgery).

Each patient's operation was timed from the beginning of anesthetic induction through the insertion of the last closure stitch. At 2 weeks and 4 weeks after surgical procedure, all patients were checked for the emergence of SSIs before being discharged. Each patient was assessed by the main surgeon who divided the SSI into three types: organ space infections, deep infections, and superficial infections. The length of the hospital stay was calculated as the number of days from the time of operation till discharge. It was recorded the location of the tumor, the surgical technique used, and the length of the whole process.

Version 26.0 of SPSS was used to analyze the data. For quantitative characteristics including age, BMI, surgery time, and hospital stay, mean and SD were computed. In terms of frequency and proportion, qualitative factors including gender, tumor location, surgical technique, and SSIs were noted. To compare all variables with the SSI development across groups, the Chi-square test was used. To compare hospital stays concerning the 2 groups, an none dependence sample T-test used. P-value of 0.05 was measured noteworthy.

RESULTS

A total of 200 patients distributed into two groups were studied. Each sample mean age was of 42.34 +_14.45 in which 55% (n=110) were male and 45% (90) . 60% (n=120) patients had colon diseases while 40% (80) had rectal disease .The BMI of each was 27.76 +_3.31 kg/m2.and the pre surgery features are **(shown in table 1**) none of the variable showed statistical differences

Variable	Group A	Group B	p-value
Age (years	41.43 ± 14.28	43.25 ± 14.	0.493
Gender			
Male	50% (n=55)	50%(n= 55)	
Female	22.5 (n=45)	22.5 (n=45)	1.0
BMI kg/m2	27.85 ± 3.38	27.66 ± 3.25	0.763
Primary tumor site			
Colon	30%(n=60)	30%(n=60)	0.714
Rectum	20%(n=40)	20% (n=40)	

T able 1: Preoperative characteristics

. Overall of 49% (n=98) patient had done open surgeries and 51% (n=102) had laparoscopic surgery. In group a 2 samples were changed from laparoscopic to exposed surgery while group B three patents submit yourself to conversion A over-all number of 10% (n=20) patients were

given stoma ,10 in group A and 8 in group B. Total surgical procedure duration was (148.82 +-19.31) minutes which was not statistically significant across group (P =0.895). the mean hospital period of individual (5.95+-2.92) days and period stay was (3.45+-1.73) day with ERAS and 8.25 +-1.58 days conventional management (P =0.001). Surgical site infection developed in a total of 30% (n=60), in which 9 %(18) SSI occur in group A while 21% (42) followed by group B (P = 0.03) while 70% had not (n =140) had not SSI. **(The post-operative surgical parameters are shown in tab 2)**

Variable	Group A	Group B	P value
Category of surgical procedure			
Open	24.5% (n=49)	24.5% (n=49)	0.584
Laparoscopic	25.5%(n=51)	25.5% (n= 51)	
Mean Operation Time minutes	148.65 ± 19.26	148.19 ± 14.53	0.895
Mean Hospital Stay (Days)	3.45 ± 1.73	8.25 ± 1.58	<0.001
Surgical Site Infections			
Yes	9% (n=18)	21 %(42)	0.031
No	40%(n=80)	30% (60)	

Table 2: Postoperative features

DISCUSSION

Based on the most recent research, the ERAS surgical guideline places a high priority on minimizing the surgical fault to the individual, promoting quick healing, in delaying the return to biological function [13]. It has been shown to speed up recovery time after surgery, particularly colorectal surgery, by lowering the likelihood of postoperative complications. Indirectly, both of these consequences result in a lower use of incomparable resources and expenses [14]. The use of slightly hostile surgical procedures, sufficient patient counseling, a customized meal plan, optimum analgesia, suitable hydration and electrolyte supplements, and promoting early enteral intake and movement are some specific strategies [15].

Compared to laparoscopic/standard treatment, it was somewhat longer at 6 (interquartile range: 4.5–9.5) days (interquartile range: 4-8). This augmented to 7 (5-11) days with exposed surgery and ERAS, and it got e longer with open surgical procedure and typical caution, 7 (6-13) days, (p 0.001). These numbers were also shown to be true for the open surgery/standard care group. 5 (4-7), 6 (4-8.5), 6 (4.5-10), and 7 (6-10.5) days, respectively, were reflected in the post-operative stay (p 0.001).

The results consistent w our own, but Vlag MS et al. found through examination that laparoscopic surgical procedure, not the use of ERAS, was a better predictor of shorter hospital stays and lower morbidity, and that there was no difference between the groups in terms of postoperative morbidity (including the development of SSI), re-surgery and readmission ratios, , individual happiness, and overall financial outlay [16]. These results, in terms of length of hospital stay, were similar to our results.

In their meta-analysis, Greco M. et al. found that ERAS in colorectal surgery reduced disease (relative ratio = 0.60; 95% confidence interval [CI]: 0.45-0.75), but did not reduce surgical complications such SSIs (RR = 0.76; CI: 0.54-1.08). Shortened hospital stays were a tangible benefit (variance [WMD] = -2.27 days, 96 percent CI: -3.08 to -1.47) [17].

Equally, Zhan CL . not only determined that ERAS in colorectal surgery was related with a statistically important lessening to length of hospital stay (WMD = -2.44 days; 95% CI: -3.06 to -1.83 days; $p < 0.00001$), total period of admission (WMD = -2.38 days; 95% CI: -3.71 to -1.08 days; $p = 0.0003$), but was also linked with a decrease in the incidence of problems such as SSIs (RR: 0.71; 95% CI: 0.58-0.86; $p = 0.0006$) [18]. The ratio of SSI in the ERAS group significantly decreased, according to our findings (p 0.05).

Rawlinsen Found that severe adherence to ERAS procedures was related with reduced postoperative morbidity, shorter hospital admittance, and a quicker return to task after colorectal surgery, the proof obviously demonstrated it had no impact on the rates of re-admissions or mortality [19]. Nevertheless, the rationality and usefulness of ERAS remain a matter of some debate. Yet another study by Currie A . [20] came to similar conclusions. We only included the short-term follow-up in the data we gave, making no mention of readmission rates or death. We do have plans to publish a different research with a bigger cohort and a longer follow-up.

The harsh conditions for the protocols' success, which usually result in a drop in adherence, are a further discussion point. Healthcare employees' attitudes regarding the adoption of ERAS were examined by Pearsall EA et al. They found a number of issues, comprising a lack of assets and staff, poor statement, barriers to cooperation, and resistance to change [21]. In a single-center research, Ljungqvist O found that ERAS compliance rates between 50 and 90 percent were linked to a 20% drop in overall complication rate and a four-day decrease in hospital stay [22].

According to Pdziwiatr et al., atleast of 80% compliance with the entirety of the ERAS protocol was necessary before any benefit could be seen in terms of reduced hospital stays and complications, and they came to the conclusion that this level of efficiency could only be attained after at least application period of six months and at least 30 surgical cases [23]. In spite of being high at first, Roulin D et al. discovered that ERAS compliance declines with time, particularly in the postoperative period, with as many as 25 present patients no therapeutic justification for non-compliance [24].

The adoption of an ERAS procedure for colorectal resections, according to Cavallaro P et al., requires a multidisciplinary approach and commitment from the surgical treatment and anesthesia sectors [25]. The procedures must be strictly monitored throughout all stages of surgical treatment preoperatively, and they call for the optimization of all features of individual care, such as nourishment, hydration and ion equilibrium, prompt function recovery, and sufficient non-opiates analgesia. Satisfactory observance results in the best results, which is no easy task given that the implementation of ERAS calls for the facilitation of devoted support personnel, timely and honest statement between all health related practitioners, and a practical worksheet.

Our research had a particular center. It took too long to follow up to evaluate long-term morbidity and death. The viability of establishing ERAS a national standard of attention in Pakistan has to be investigated further.

CONCLUSIONS

It has been shown that ERAS procedures are reliable, affordable, and secure. The duration of hospital stays and incidence of SSIs have both significantly decreased, which translates into less resource use and lower costs. To achieve the aforementioned advantages, however, full faithfulness to the procedure may be required, that could be challenging .

It will need a lot of work to make these protocols easier to use and more desirable to deploy in order to encourage conversion to this management strategy.

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