DOI: 10.5281/zenodo.11094823 ORİJİNAL ARAŞTIRMA ORIGINAL RESEARCH

A Comparison of The Suitability of Preoperative and Postoperative Application in Clinic Area After Colorectal Surgeries for The Enhanced Recovery After Surgery Protocol

Kolorektal Ameliyatlarda Klinik Alanda Ameliyat Öncesi, Sırası ve Sonrası Uygulamaların Ameliyat Sonrası Geliştirilmiş İyileşme Protokolüne Uygunluğunun Karşılaştırılması

[1]M. Sabri KIRIK, [2]Arzu TUNA, [3] Ebru KARAASLAN

[1, 3] Arş. Gör. SANKO University, Institute of Health Science, Department of Nursing, Gaziantep, TURKEY,
[2] Prof. Dr., Balıkesir University, Faculty of Health Science, Department of Nursing, Balıkesir, TURKEY

ÖZET

Amaç: Bu çalışma, Amerika ve Avrupa'da kolorektal cerrahi sonrası uygulanan Ameliyat Sonrası Geliştirilmiş İyileşme Protokolü hakkında bilgi sahibi olan sağlık personelinin tutum ve bilgi düzeyinin belirlenmesi ve değerlendirilmesini amaçlamaktadır. **Yöntem:** Tanımlayıcı tipte olan bu çalışma, Türkiye'nin güneydoğusundaki 3 hastanede bulunan Diyarbakır'daki üç devlet hastanesinde gerçekleştirilmiştir. Çalışmanın örneklemini 116 cerrah, anestezist ve hemşire oluşmuştur. Anket soruları literatür incelendikten sonra hazırlanmış ve veriler yüz yüze görüşme yöntemiyle toplanmıştır. Verilerin değerlendirilmesi yüzde olarak verildi. **Bulgular:** Ankete katılanların yaş ortalaması 29,5 ±5,46 olup, %82,8'i hemşire, %4,3'ü cerrah ve %12'si anestezisttir. Emboliyi önlemede çorap kullanma oranı %46,5 idi. Ameliyat öncesi antibiyotik kullanım oranı %86,2 idi. Hastaların %97,5'i ameliyattan sonraki ilk yirmi dört saat içinde, %44'ü ise ameliyattan sonraki ilk sekiz ile yirmi dört saat arasında yürüdü. Ameliyat Sonrası Geliştirilmiş İyileşme Protokolünü hiç duymayan sağlık personelinin oranı ise %74,1 oldu. Kurumsal desteği olmadığı için bu protokolü uy-gulayamayanların oranı ise %93,1 oldu. **Sonuç:** Sağlık personelinin Ameliyat Sonrası Geliştirilmiş İyileşme Protokolünün uygulanması konusunda tam bilgi sahibi olmadığı, hizmet içi eğitimlerde Ameliyat Sonrası Geliştirilmiş İyileşme Protokolü uygu-lama ve uygulamalarına yer verilmediği ve sağlık personelinin son dönemde yapılan yeniliklerden fayda-lanmadığı söylenebilir.

Anahtar Kelimeler: Ameliyat Sonrası Geliştirilmiş İyileşme Protokolü, Hızlı Geçiş Cerrahisi, Hemşirelik

ABSTRACT

Aim: This study aims to find out and evaluate the attitude and the level of information of the health personnel having information about the Enhanced Recovery After Surgery Protocol which is implemented in the USA and Europe after colorectal surgeries. **Method:** This descriptive study was conducted in three state hospitals in Diyarbakir located in 3 hospitals of the southeastern Turkey. The sample of the study consisted of 116 surgeons, anesthesiologists and nurses. The survey questions were prepared after going through the literature, and the data were collected through face to face method. The evaluation of the data was given in percentages. **Results:** The average age of the participants of the survey was 29.5 ±5.46, while %82.8 of them was nurse, %4.3 of them was surgeon and %12 of them was anesthetist. The rate of using stockings in the prevention of embolism was %46.5. The rate of the preoperative usage of antibiotics was %86.2. %97.5 of the patients walked within the first twenty-four hours after the surgery, while %44 of the patients walked between the first eight and twenty-four hours after the surgery. The rate of the health personnel who had never heard about the Enhanced Recovery After Surgery Protocol was %74.1. The rate of those who could not implement this protocol because of not having an institutional support was %93.1. **Conclusions:** It can be pointed out that the health personnel did not have full knowledge of the implementation of the Enhanced Recovery After Surgery Protocol, that the Enhanced Recovery After Surgery Protocol practices and applications were not included in the in-service trainings and that the health personnel did not benefit from the recent literature like the Enhanced Recovery After Surgery Protocol.

Keywords: Enhanced Recovery After Surgery Protocol; Fast Track Surgery; Nursing

Correspondence: [1]M. Sabri KIRIK

[1]SANKO University, Institute of Health Science, Department of Nursing, Gaziantep, TURKEY,

E-mail: sabrierdemli21@gmail.com

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INTRODUCTION

In the 1990s, Enhanced Recovery After Surgery (ERAS) fast track surgery programs initiated by Professor Henrik Kehlet first in colorectal surgery, later in vascular, thoracic surgery and after radial cystectomy have become an important focal point of perioperative management (1-3). ERAS programs are the standards and guidelines that lead to early return of bowel functions and the initiation of normal physiological symptoms in cardiopulmonary function, urinary tract and all other organs, prevent complications and reduce the length of hospital stay (1,4).

Significant improvements in recovery after abdominal surgery as well as evidence-based treatment and care standards can be achieved by the implementation of the operative process protocol (5,6).

When the recovery process of patients after the bowel surgeries is followed up traditionally, we see that the recovery process of the patient progresses slowly and gradually with late diet planning after the operation. This is because it is believed that fast recovery is not reasonable (7).

This program introduced by Kehlet et al. (2008) is based on the following principle; reducing the stress response of the body after surgery reduces the time needed to heal. Many experts come together with this new information and update their perioperative (before, during and after the surgery) interventions. Thus, patients can mobilize earlier and start a normal diet faster and their complication risks may reduce (2).

The main items of ERAS protocol are to provide counseling services before and during the surgery, to ensure the optimal nutrition, to standardize analgesic and anesthetic treatments, and to make the patient walk in the earliest period (8).There are 4 randomized trials showing that ERAS can be considered safe, that is, it does not cause more complications or death and stating that the number of days spent in the hospital following major bowel operations will decrease. In this randomized trial, the data had poor quality and therefore it did not justify the application of ERAS as a standard care method. Therefore, further studies on other outcome parameters such as economic evaluation and quality of life are required. In the study, it was found that ERAS can be seen as safe, that is, it did not cause more complications or death and also decreased the number of hospitalization days following the major bowel surgery (9).

Enhanced Recovery After Surgery (ERAS) program is a multi-dimensional approach that requires team work for the care of the patients who underwent surgery. Enhanced Recovery After Surgery procedure is performed by a team of units dealing with surgical patients such as surgeons, anesthesiologists, an ERAS coordinator (mostly a nurse or a physician assistant) and is based on published evidences (7, 10).

ERAS team applies guidelines updated for many surgeries including minimal invasive approaches and evidence- based modern care changes, such as fluid intake up to 2 hours before the surgery, reduction of fasting time, and carbohydrate loading before surgery. The incision site, the early removal of drains and tubes for fluid management, standing up the patients from the bed and making them walk in the earliest period, and the stimulation of the gastrointestinal system after surgery are the responsibilities of the ERAS team (11).

It has been observed that ERAS protocols reduce the length of hospital stay by 30% and 50%, lead to similar reductions in the postoperative complications, and reduce the cost. In the protocol, it is emphasized that it is important to reduce the surgery-induced stress in order to

preserve homeostasis (body balance). The ERAS protocol is now the structured practice programs used in more than 20 countries. ERAS teams are trained to implement the Enhanced Recovery After Surgery processes. ERAS protocol compliance and control of ERAS results are important features. The enhanced recovery after surgery has begun with colorectal surgery but has been shown to improve outcomes in almost all major operations (10). The Enhanced recovery after surgery (ERAS) or rapid follow-up protocols have been applied to different surgical areas in order to alleviate the surgery-induced stress response and accelerate the recovery process. For articles describing postoperative clinical pathologies in pancreatic operations between 2000 and 2013, a literature review was conducted on MEDLINE, CINAHL, EMBASE and Cochrane Library. The articles were selected to be included based on predefined criteria and ranked in terms of quality. In the evidences, it was shown that the ERAS protocols increased the patient safety or early discharge. The expressions "The Enhanced Recovery After Surgery protocols should be standardized based on the best evidence and ERAS programs with more than one center should be tried" are stated in the literature (12).

This study was conducted to compare the treatment, intervention and care approaches before, during and after the surgery and also the traditional practices with the standards in the enhanced recovery after surgery (ERAS) protocols. To make this comparison, the knowledge and behaviors of the surgeons, nurses and anesthesiologists about ERAS protocol were determined.

MATERIAL and METHOD

Type of Research: This descriptive study was conducted in three state hospitals in Diyarbakir located in the southeastern Turkey.

Location and Time of the Research: The knowledge levels of the surgeons, nurses and anesthesiologists in the general surgical clinics about the traditional practices and the ERAS protocol were determined. The data of the study were collected between 1 May 2017 and 31 January 2018.

Population and Sample of the Research: The population of the study consisted of all of surgeons, nurses, and anesthesiologists working in general surgical clinic, operating room and adult intensive care unit in Silvan Doctor Yusuf Azizoğlu State Hospital, SBU Diyarbakir Gazi Yaşargil Training and Research Hospital, and Diyarbakir Selahaddin Eyyubi State Hospital. The number of all nurses, surgeons, and anesthesiologists working in general surgical services was 140 people. 116 people participated in the study. The sample consisted of professionals who responded to the questionnaire.

Data Collection Tools: In addition to the sociodemographic characteristics of the participants such as age, gender, duration of working in the profession, duration of working in the institution, position; their "knowledge about the ERAS of Practices Before, During, and After the Surgery in Clinical Field in Colorectal Surgery" was collected comprehensively using an evaluation form. It is the form evaluating comprehensively the sociodemographic characteristics of the healthcare professionals participating in the study such as age, gender, duration of working in the profession, duration of working in the institution, position, as well as their "knowledge about the ERAS of Practices Before, During, and After the Surgery in Clinical Field in Colorectal Surgery".

Data Collection: Surgeons, nurses, and anesthesiologists working in general surgical clinics filled the evaluation forms under the supervision of the researcher. In the present study conducted in the clinical field, a questionnaire was applied to cover all surgical clinics of the hospitals where the study was conducted. In this form, it was examined if the healthcare professionals complied with the traditional practice and ERAS protocol. All nurses, surgeons, and anesthesiologists in the surgical services constituted the population. The professionals who responded to the questionnaire were included in the sample.

Statistical Analysis: The data were transferred to SPSS for the Windows 22 software, and statistical analyses were done. While categorical variables were calculated as number (n), percentage (%), continuous variables were calculated as mean±standard deviation and minimum and maximum values.

Ethical Considerations: The data obtained from in the questionnaire were examined with number and percentage. Before the study, approval from SANKO University Clinical Trials Ethics Committee (protocol no: 2017/03-2 date: 16.03.2017) and permission from the Chief Physicians in were obtained. The questionnaire prepared by the researchers was applied to surgeons, nurses, and anesthesiologists working in general surgical clinics.

RESULTS

Table 1 shows the sociodemographic data of the patients. The mean age of the participants was 29.5 ± 5.4 (min:21, max: 50). 59.5 % (n=69) were female. When examining the occupational groups participating in the study, 84.48% (n=98) were nurses, 6.03% (n=7) were surgeons, and 14.65% (n=17) were anesthesiologists.

When examining the working duration of the participants in their position, it was observed that 47.4% (n=55) were working for 0-5 years, 35.3% (n=41) for 6-10 years, 15.5% (n=18) for 11-20 years, and 1.7% (n=2) for 20 years and more. When examining the experience duration of the participants, it was observed that 52.6% (n=61) were working for 0-1 years, 28.4% (n=33) for 2-3 years, 15.5% (n=18) for 4-5 years, and 3.5% for 6 years and more (Table 1).

Table 1. Socio-demographic Characteristics of the Surgical Team

Socio-demographic characteristics	**n**	**%**
Age	29.5 ±5.4 (min:21, max: 50)	
Gender		
Male	47	40.5
Female	69	59.5
Education status		
Health vocational high school	17	14.7
Associate degree	17	14.7
Licance	70	60.3
Master degree	12	10.3
Your job		
Nurse	98	84.48
Surgeon	7	6.03
Anesthetists	11	9.49
How many years have you been working on this task.		
0-5 year	55	47.4

6-10 year		41	35.3
11-20 year		18	15.5
20year and more		2	1.7
How many years have you been working in your clinic?			
0-1 year		61	52.6
2-3 year		33	28.4
4-5 year		18	15.5
6 year and more	4		3.5

It was found that 37,9% of the participants (n=44) stated that the liquid food intake of the patients in the last few days before colorectal surgery was ensured and the patients were left hungry after the midnight before the surgery.

When we asked where the patients received consultation training about colorectal surgery before the surgery, 12.1% (n=14) stated to receive the training from nurses, 31.9% (n=37) from surgeons, 4.3% (n=5) from anesthesiologist, and 51.7% (n=60) from all healthcare professionals.

When the participants were asked which occupational group spend more time for preoperative consultancy about the colorectal surgery, 50.0% (n=33) stated that the group was nurse, 31.8% (n=21) surgeon, and 18.2% (n=12) anesthesiologist.

When we asked the participants how they inform the patients before the surgery about the matters such as mobility, breathing exercises, food intake and rehabilitation targets about the surgical principles, 59.6% (n=69) responded as face-to-face interview.

To the question of "should carbohydrate-rich oral fluid loading be made to the patients before the colorectal surgery?", 44.8% (n=52) responded as yes and 55.2%(n=64) responded as no.

The presence of doctor/nurses who can adequately care the patients who will undergo colorectal surgery at your service will affect the recovery process of the disease. When the participants were asked whether or not doctors/nurses in their services had treatment and care protocols prepared to carry out the care in colorectal surgeries, 81.0% (n=94) responded as yes and 19.0%(n=22) responded as no.

When we asked if antiembolic socks are applied to all patients who would undergo colorectal surgery in order to reduce the risk of embolism, 46.5% (n=54) said yes and 53.4% (n=62) said no.

When we asked if prophylactic antibiotics are administered up to half an hour before the surgery to all patients who would undergo colorectal surgery, 86.9% (n=100) responded as yes and 13.8% (n=16) responded as no.

When we asked when their patients start to drink water after the colorectal surgeries 36.2% (n=42) as the doctor request.

When we asked when the patients start to take oral soft food after colorectal surgery, 14.7% (n=17) of the participants responded as mobilization within the first 8 hours, 3.4% (n=4) within the first 1-2 hours, 11.2% (n=13) the first 3-4 hours, 33.6% (n=39) as the first 4-8 hours, 0% (n=0) the first 8-24 hours, and 51.7% (n=60) the time 24 hours after the surgery.

When we asked the participants if they have the practice of ERAS (Enhanced Recovery After Surgery)/(Fast Tract Surgery) protocol after colorectal surgery in your service., 25.9% (n=30) of the healthcare professionals said yes and 74.1% (n=86) said no.

Table 2. Planning Colorectal Applications During Surgery Perioperative Preparation (n:116)

Your patients' fasting time before colorectal surgery	**n**	**%**
-Patients should be fasted after liquid food intake in the last few days and midnight before surgery	44	37.9
-Oral intake should be stopped after midnight the day before the surgery	60	51.7
- Solid foods should be continued one day before the surgery, the amount should be reduced, the patient's solid food intake should be stopped before surgery (6 -8hours), and the patient's oral fluid intake should be stopped before surgery (2 hours).	12	10.4
Who provides counseling on colorectal surgeries (you can give more than one answer)		
Surgeons	37	31.9
Anesthetist	5	4.3
Nurse	14	12.1
All	60	51.7
How is the consultancy service done?		
Face to face interview	69	59.4
Face to face interview and brochure	23	19.8
By face-to-face interview, brochure and application, respectively	24	20.7
Multimedia (no use of TV, computer and training simulation room)	0	0
Do you think that your patients will not get carbohydrates before colorectal surgery?		
Yes	52	44.8
No	64	55.2
Are there any treatment and care procedures prepared for the doctors / nurses at your service to carry out care in colorectal surgeries?		
Yes	94	81.0
No	22	19.0
Do you apply anti-embolic socks to every patient who will undergo colorectal surgery?		
Yes	54	46.5
No	62	53.4
If your answer is yes, do you explain how to use these socks?		
Yes	53	62.4
No	32	37.6
Is anti-embolic therapy given to every patient who will undergo colorectal surgery?		
Yes	73	62.9
No	43	37.06

Is prophylactic antibiotics applied to every patient who will undergo colorectal surgery?		
Yes	100	86.2
No	16	13.6
When do your patients start taking fluids (drinking free water) after colorectal surgeries.		
Day of surgery	10	8.6
Post-op Day	17	14.7
When the doctor requests	42	36.2
When bowel sounds begin	25	21.6
When gas exits	22	19.0
How much are your patients after colorectal surgeries taking oral soft food in a short time?		
In the first 8 hours	4	3.4
After 24 hours	112	97.2
How much is your patient after colorectal surgeries mobilize in a short time?		
Mobilization within the first 8 hours	17	14.7
In the first 8-24 hours	51	44.0
After 24 hours	48	41.4
ERAS (Enhanced Recovery After Surgery) at your service. Do you follow the (Fast Track Surgery) protocol after colorectal surgeries?		
Yes	30	25.9
No	86	74.1

DISCUSSION

According to the enhanced recovery after surgery (ERAS) protocol, patients undergoing general anesthesia are discharged earlier. In this process, patients remain hungry and are dehydrated for less time before and after the surgery, are fed with IV infusion before the operation, can take liquid within 2 hours after the operation and can be fed within 4-6 hours. In this way, metabolic acidosis is prevented and an important step is taken for wound site healing (1,7).

Sitting and standing at early phases increase the lung capacity of the patients, prevent lung ponomonia and atelectasis, accelerate peristalsis, prevent deep vein thrombosis and embolism, and accelerate circulation and wound site healing (2,13).

In ERAS protocol, intestinal preparation of the patients is performed in a shorter time compared to the conventional methods and without leaving the patient hunger and without fluid electrolyte

loss, there are prophylaxis to prevent thromboembolism and the growth of microorganism, particularly antibiotics are administered within the half hour before the surgery to reduce the colonization of microorganisms, low-dose heparin is used in the selection of anticoagulants and early mobilization and compression socks are recommended to the patients (13-15). ERAS protocols take place as radical practices against traditional practices in treatment and care before, during and after the surgery. The conducted meta-analysis revealed that discontinuation of mechanical bowel disease in colon surgery was important in maintaining fluid electrolyte balance and MBH did not reduce anastomosis leaks after colon surgery (7).

According to the results of this study conducted to find out whether or not the new applications that have come to the fore with ERAS in Diyarbakır province in southeastern Turkey are known; it was determined to be the procedures including treatment and care such as fasting time before surgery, bowel preparation, the use of compression socks to prevent deep vein thrombosis, foot exercises at earliest period after surgery and sitting of the patients, standing and walking of the patients were different from the ERAS protocols. In the study, it was found with the questions asked to the nurses, anesthesiologists, and surgeons that they had no knowledge, behaviors, and attitudes toward the subjects in ERAS protocol and conventional classical practices have maintained. Accordingly, it was found that while 10.4% of the healthcare professionals left patients hungry in accordance with ERAS protocol, their status of discontinuing the solid foods and feeding the patients with fluid food a few days before the surgery, and leaving the patient hungry after the midnight before the surgery which are one of the traditional clinical practices was found to be 38.3%. Termination of oral intake after midnight the night before the operation was 51.8%. The rate of healthcare professionals meeting the ERAS protocol was 10.4%. These personnel apply attitudes and behaviors similar to the literature in the Committee (2011); they reduce the solid food intake in the patients in the day before the surgery, discontinue the solid food intake 6-8 hours before the surgery, allow the patients to get fluids up to 2 hours before the surgery. 12 healthcare personnel were in compliance with the fasting time before the surgery established by American Society for Enhanced Recovery (2016) .

Informing patients before the operation decreases their anxiety levels, stress level of the patients with decreased anxiety level decreases and this affects the wound site healing positively, regulates blood sugar, leads to effective oxygenation of tissues, and causes positive development of inflammation response (16). In ERAS protocol, patients should be informed before the surgery. As a result of the results obtained from the study, it can be asserted that the patients were informed before the surgery but this information was not structured by using designed, planned, audiovisual, multi-technological, demonstration techniques and the patients were not informed adequately (17).

Prolonged fasting time may lead to problems such as metabolic acidosis and delay in wound site healing in patients. In order to have adequate glucose support, which is as important as not leaving the wound site without oxygen, and to reduce insulin resistance, 800 ccc oral liquid carbohydrate in the night before the surgery and 400cc oral liquid carbohydrate after the surgery are recommended by ERAS protocol (18).In the present study, it was found that the nurses, surgeons, and anesthesiologists did not administer oral carbohydrates to the patients before the surgery and 55.2% stated that this information was not in the classical practice.

According to ERAS, bowel preparation should be abandoned. It is discussed in the ERAS protocols that bowel preparation causes the disturbance of fluid electrolyte balance before surgery, can cause an increase in fluid higher than the value taken to the body, causes leakage in anastomosed bowel, increases hospitalization time especially in elderly patients and causes death (19).The ERAS protocol recommends that procedures and nursing care before, during and after the surgery should be performed with specific written procedures (20). In the present study, it was determined that the written procedures in the hospitals in Diyarbakır were found to be sufficient by the healthcare professionals (81%). However, these written procedures were not evidence-based and the level of evidence was low. The presence of treatment and care procedures for the patients is important for quality, patient satisfaction and preventing complications. However, it was clear with all given answers that ERAS protocol was not involved in clinical area as the most recent approach.

According to the ERAS protocol, patients should be given anticoagulant treatment and patients should even have appropriate compression socks (13). In the present study, the rate of healthcare professionals stating that anti-embolic medication was applied was 62.9% but 37.06% of the healthcare professionals could not give a clear answer. The rate of antiembolic socks given to patients to prevent embolism after surgery was 46.5%. 53.4% of the healthcare professionals did not give compression socks to the patients after colorectal surgery. According to this information, ERAS protocol was not applied in anesthesia and long-term abdominal operations.

According to the ERAS protocol, antibiotic prophylactic should be performed within half an hour before or during surgery (21). In the present study, 86.23% of the healthcare professionals (nurse, surgeon, anesthesiologist) performed antibiotic prophylaxis in accordance with the ERAS protocol. The practice of healthcare professionals about this issue was like the ERAS protocol.

The ERAS protocol reports that clear fluids should be started immediately within the hours after surgery after colorectal surgery (22). According to the statements of the healthcare professionals participating in the present study, the rate of those who stated that the oral fluid intake should be started on the day of surgery was 8.6%. According to this result, it can be asserted that postoperative oral fluid intake was not performed according to ERAS protocol.ERAS protocol recommends oral soft food intake within the first 8 hours after surgery (23). However, it was determined in the present study that patients started oral intake 24 hours after the operation.

CONCLUSION AND RECOMMENDATIONS

- We can say that healthcare professionals did not have exactly knowledge about ERAS,
- There were also no in-service trainings that can change the knowledge, behavior and attitudes of healthcare professionals towards ERAS protocol,
- Healthcare professionals did not place the current literature information such as evidence-based ERAS protocol instead of classical traditional practices.

- Providing in-service training programs to the healthcare professionals including ERAS protocol evidence-based practices,
- Increasing the participating of symposium, conferences where the healthcare professionals can increase their current knowledge,
- Giving more importance and implementing the research results and the protocols such as ERAS by the hospital management can be recommended.

Conflict of Interests

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