Approach Of Surgeons To Eras (Enhanced Recovery After Surgery) Protocol - Multicenter Questionnaire

***Ülkü Aygen TÜRKMEN*[1], *Ebru ONUK*[2], *Melike TEZDÖNEN*[3], *Nergis SUNGUR*[4], *Döndü GENÇ MORALAR*[5], *Rıza Haldun GÜNDOĞDU*[6]**

ABSTRACT

We aimed to learn the knowledge, thoughts and opinions of the surgeons about ERAS (Enhanced Recovery After Surgery)and to evaluate the tendency in their clinics in the four different centers in Istanbul. The questionnaire was prepared to determine the attitudes and approaches and also to increase the awareness of surgeons. The questionnaire was answered by surgeons, gynecologists, and urologists and the results are evaluated. According to the results of the survey, we determined that the majority of surgical teams still prefer the classic approaches. Surgical clinics seem to have mastered the approaches in their field and have little experience with the other components of the protocol. It is concluded that ERAS is very difficult to implement

1 Department of Anesthesiology and Reanimation, Gaziosmanpasa(GOP) Training and Research Hospital, University of Health Sciences, Istanbul, Turkey
aygenturkmen@hotmail.com, https://orcid.org/0000-0002-7280-6420
2 Department of Anesthesiology and Reanimation, Gaziosmanpasa(GOP) Training and Research Hospital, University of Health Sciences, Istanbul, Turkey
onuk-e@hotmail.com, https://orcid.org/0000-0002-5851-4296
3 Department of Anesthesiology and Reanimation, Gaziosmanpasa(GOP) Training and Research Hospital, University of Health Sciences, Istanbul, Turkey
mlk_tzdnn@hotmail.com, https://orcid.org/0000-0003-1142-9104
4 Department of Anesthesiology and Reanimation, Gaziosmanpasa(GOP) Training and Research Hospital, University of Health Sciences, Istanbul, Turkey
nergisnet@hotmail.com, https://orcid.org/0000-0001-9179-7235
5 Department of Anesthesiology and Reanimation, Gaziosmanpasa(GOP) Training and Research Hospital, University of Health Sciences, Istanbul, Turkey
dondugencm@gmail.com, https://orcid.org/0000-0002-4229-4903
6 Department of Gastroenterologic Surgery, Bilkent City Hospital, Ankara, Turkey
haldun@haldungundogdu.com, https://orcid.org/0000-0002-7021-4827
Doi Num: 10.17932/IAU.ASD.2015.007/asd_v06i3002

due to its multidisciplinary and institutional structure.

***Keywords**: ERAS, postoperative accelerated recovery protocol, surgical awareness, multicenter questionnaire*

Cerrahların Eras (Cerrahi Sonrası Hızlandırılmış İyileşme) Protokolüne Yaklaşımı - Çok Merkezli Anket

ÖZ

ERAS (Enhanced Recovery After Surgery / Cerrahi Sonrası Hızlandırılmış İyileşme Protokolü) ile ilgili cerrahların bilgi, düşünce ve görüşlerini öğrenmeyi ve İstanbul'da dört farklı merkezde kliniklerindeki yaklaşımı değerlendirmeyi amaçladık. Anket tutum ve yaklaşımları belirlemek için hazırlandı ve cerrahların farkındalığını da arttırdı. Anket cerrahlar, kadın doğumcular ve ürologlar tarafından cevaplandırıldı ve sonuçlar değerlendirildi.

Anket sonuçlarına göre, cerrahi ekiplerin çoğunun hâlâ klasik yaklaşımları tercih ettiğini belirlendi. Cerrahi kliniklerin kendi alanlarındaki yaklaşımlara hâkim olduğu ve protokolün diğer bileşenleri hakkında çok az deneyime sahip oldukları görünmektedir. ERAS'ın çok disiplinli ve kurumsal yapısı nedeniyle uygulanamayacağı sonucuna varılmıştır.

Anahtar Kelimeler: ERAS, Cerrahi Sonrası Hızlandırılmış İyileşme Protokolü, Cerrahi farkındalık, Çok merkezli anket

INTRODUCTION

The ERAS protocol is a multidisciplinary and institutional approach to perioperative follow-up. It was first described by Henrik Keehlet, a Danish surgeon, in 1995 for colon resections(Bardram et al.,1995).

This definition was later developed as ERAS. Although this approach has been defined primarily for colon surgery, it is used in many surgical procedures such as caesarean section, knee prosthesis, laryngectomy, cystectomy. ERAS protocols consist of evidence based approaches aiming to minimize the reactions caused by surgical stress.

ERAS protocols are based on three main principles: evidence-based

perioperative approach, a multimodal-multidisciplinary team and continuous supervision (Ljungqvist, & Hubner, 2018).

It consists of many elements that have been proven to reduce the complication and accelerate healing in preoperative, intraoperative and postoperative patient follow-up (Tablo 1).

Table 1. *ERAS*

Since many ERAS guidelines for science have been developed, only common elements are included here. It is appropriate to consult original guidelines on site-specific situations and explanations.		
PREOPERATIVE	INTRAOPERATIVE	POSTOPERATIVE
Education	Anesthesiology protocol	NG tube
Prehabilitation		
Bowel preparation	Selection of surgical incisions	Urinary catheter
Starvation	Prevention of hypothermia Glycemic control	
Assessment of nutritional status		
Nutritional support if necessary	PONV multimodal management	Stimulation of GI motility
Preoptimization	Fluid optimization	Postoperative analgesia
Premedication	Drainage tube use Feeding	
Tromboprophylaxis		Early mobilisation
Antimikrobial prophylaxy.		Discharge
Shaving or waxing.	Follow-up and audit of results	

Although it does not seem easy to give up the classic approach in both anesthesiology and surgical clinics, the researches and studies about ERAS are increasing in the world. In order to increase the researches and studies on this subject in our country, we thought that it is necessary to increase the awareness. We conducted this survey to measure the surgeons' awareness and knowledge of ERAS who are working in Istanbul.

MATERIALS AND METHOD

After obtaining the approval of the Ethics Committee, a questionnaire consisting of 29 questions was prepared to ask the opinion of specialists and residents in general surgery, gynecology and urology clinics in University of Health Sciences, Gaziosmanpasa, Okmeydani, Bakirkoy Sadi Konuk and Umraniye Training and Research Hospitals in Istanbul (Table 1). As in the similar studies, ERAS recommendations and questionnaires are used in the preparation of this form(Harlak et al., 2008).

The questionnaire consisted of 29 multiple-choice questions. It was hand-delivered to 184 physicians. The answer to each question was evaluated in itself. SPSS 22.0 Statistical package program was used for statistical analysis. Descriptive statistical methods (Frequency, Percent) were used to evaluate the study data. Pearson Chi-Square test was used for comparisons between clinics and hospitals in terms of physicians' approach to open elective abdominal surgery. Results were evaluated at 95% confidence interval and $p < 0.05$ was accepted as the significance level.

RESULTS

A total of 184 surgeons, of whom 98 (53%) were specialists and 86 (46.7%) residents, participated in the study, 50 (27.2%) of them are working in GOP Training and Research Hospital; 36 (19.6%) in Okmeydani Training and Research Hospital; 47 (25.5%) in Bakirkoy Sadi Konuk Training and Research Hospital and 51 (27.7%) in Umraniye Training and Research Hospital. 71 (38.6%) of the participants are general surgeons, 70 (38.0%) of them are gynecologists and 43 (23.4%) are urologists. (Table 2).

Table 2. *Doctors and hospitals participating in the study*

		n	%
Participants	Specialists	98	53,3
	Residents	86	46,7
	TOTAL	184	100
Hospitals	GOP Training and Research Hospital	50	27,2
	BAKIRKOY Training and Research Hospital	36	19,6
	OKMEYDANI Training and Research Hospital	47	25,5
	UMRANIYE Training and Research Hospital	51	27,7
	TOTAL	184	100

Clinics	Surgery	71	38,6
	Obstetry & Gynecology	70	38
	Urology	43	23,4

The answers are evaluated in itself. We asked the participants;

About the preoperative fasting that they made, 33 (18.0%) of them answered that they give liquid during the last few days and hunger after last midnight;

128 (69.9%) participants answered that they order to stop oral intake at midnight after normal dinner on the last day; 20 (10.9%) of them answered that they give solids until six hours before surgery and liquids until two hours before surgery, and 2 (1.1%) of them answered "the other" choice.

"Do you perform premedication before surgery?" 71(38.8%) of them answered "yes" and 112 (61.2%) answered "no".

"About informing the patient" 150(%82,0) of them answered "yes", 33 (%18,0) of them answered "no".

Among the clinics; the rate of informed patients is higher in the urology clinic than that in the surgery and ob&gyn clinics. 53 of the surgeons (74.6%) answered as "yes", 18 (25.4%) of them as "no"; 56 (81.2%) of the obstetricians answered "yes", 13 (18.8%) of them "no"; 41 (95.3%) of the urologists answered "yes", 2 (4.7%) of them answered "no".

"Do you make bowel preparation?" 30 (16.4%) of the participants answered "no" and 153 (83,5%) of them answered "yes": 5 (2.7%) of them selected the choice "with purgative"; 59 (32.2%) of them selected the choice of "with oral enema" and 89 (48.6%) of them selected the choice of "with both" (Figure 1).

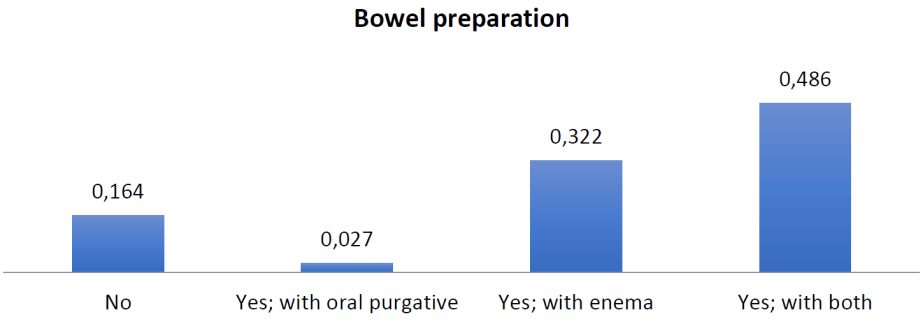

Figure 1. *Answers to Bowel preparation*

"About the effect of intestinal preparation on anastomosis leakage", 15 (8.2%) of them selected the choice "increased", 92 (50.3%) of them selected the choice "decreased" and 76 (41.5%) of them selected "it doesn't affect" choice (Figure 2).

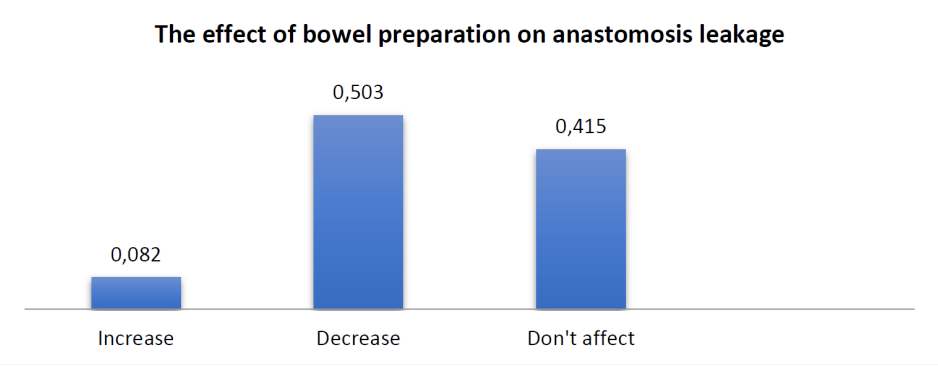

Figure 2. *The effect of bowel preparation on anastomosis leakage*

"Do you make thromboembolism prophylaxis?" 53(28.8%) of them answered as "yes; with LMWH", 50 (27.2%) of them answered "yes; with compression stockings", 2 (1.1%) of them answered "no", 16 (8.7%) of them answered "sometimes", 63 (34.2%) of them answered "both: LMWH and compression stockings".

"About the anesthesia protocol", 170 (92.4%) of them answered that they did not interfere with anesthesia and leave it to the preferences of anesthesiologists, 14 (7.6%) of them answered that they recommend the use of short-acting drugs (propofol, remifentanil).

"If they want an epidural catheter to be replaced", 78 (42.4%) of them answered "yes" and 106 (57.6%) of them answered "no".

When the difference between the clinics was compared, we saw that the rate of epidural demand of general surgeons is higher than the other two clinics. 38 (53.5%) of the general surgeons selected the choice "yes", 33 (46.5%) of them selected "no"; 20 (28.6%) of those in obstetric & gynecology clinic selected choice "yes", 50 (71.4%) of them selected "no"; 20 (46.5%) of the urologists answered "yes" and 23 (53.5%) of them "no".

"What are your surgical incision preferences?" 137 (75.3%) prefer "incisions as small as possible", 45 (24.7%) prefer "comfortable and safe operation with large incision".

"If they care not to experience intraoperative hypothermia?"144 (78.3%) of them answered "yes" and 40 (21.7%) of them answered "no".

"Do you routinely keep the nasogastric tube more than 4 hours post-operatively? 91 (49.7%) of them answered "no", 56 (30.6%) of them answered "yes, till next morning"; 2 (1.1%) of them answered "yes; two days or more"; 34 (18.6%) of them answered "yes; till the start of bowel movement". When the clinics are compared among themselves, 36 (51.4%) of the general surgeons answered as "no" and 11 (15.7%) of them answered "yes; till next morning"; 45 (64.3%) of the gynecologists answered "no", and 19 (27.1%) of them answered "yes; till next morning"; 6 (8.6%) of them answered "yes; till the start of bowel movement"; 10 (23,3%) of the urologists answered "no", 26 (60.5%) of them answered "yes; till next morning", 2 (4.7%) of them answered "yes; two days or more", 5 (11.6%) of them selected the choice "yes, till the start of bowel movement". (Figure 3)

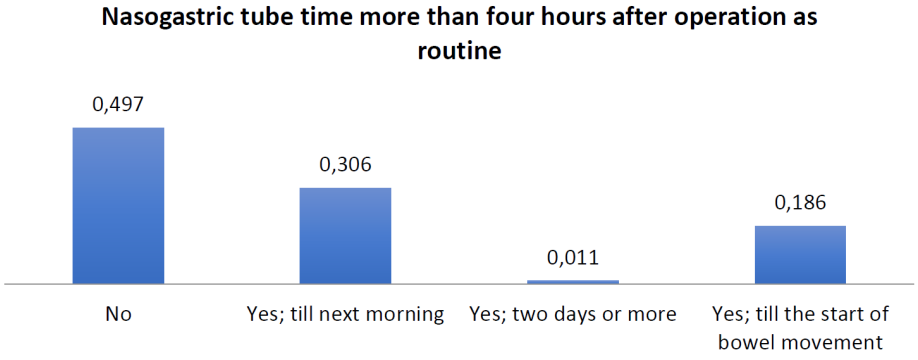

Figure 3. *Retention time ofnasogastric tube*

Unlike the general surgery clinic, other clinics prefer to remove nasogastric tube earlier.

About the drain application? 40 (21.7%) of them preferred to put drain, 11 (6.0%) of them, not to put drain, 133 (72.3%) of them decided according to the progress and type of the operation (Figure-4).

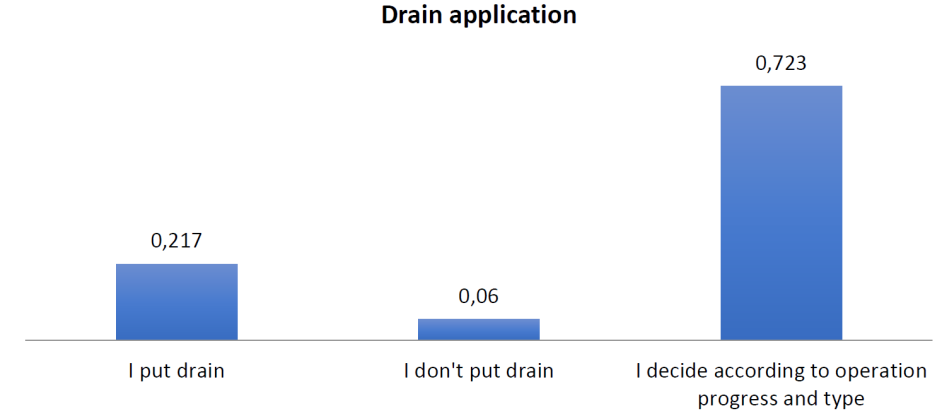

Figure 4. *Drain application*

When the clinics compared between themselves, the most routine drain insertion rate is in the urology clinic (46.5%).

"Do you perform prophylaxis of postoperative nausea and vomiting?" 104 (56.5%) of them answered "yes", 80 (43.5%) of them answered "no". 37 (52.1%) of general surgeons answered "yes", and 34 (47.9%) of them

answered “no”; 49 (70.0%) of the obstetricians answered “yes”, 21 (30.0%) of them answered ”no”; 18 (41.9%) urologists answered “yes” and 25 (58.1%) of them answered “no” (Figure-5). Compared to the other clinics, nausea and vomiting prophylaxis is made routinely in the obstetrics clinic. (Figure 5)

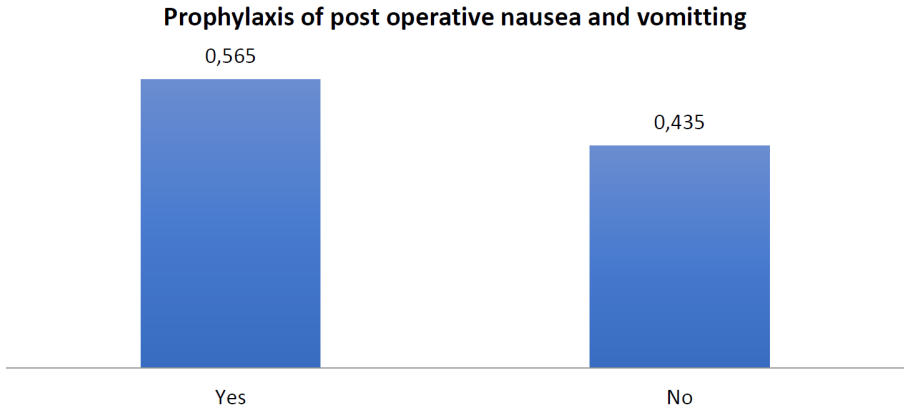

Figure 5. *Prophylaxis of post operative nausea and vomiting*

“About the prophylaxis of ileus”, 101 (54.9%) of the surgeons answered “yes” to the opioid avoidance question and 83 (45.1%) of them answered “no”. Doctors answered the question: Do you use oral magnesium oxide for ileus prophylaxis? 15 (8.2%) of them answered “yes”, 169 (91.8%) of them answered “no”.

“**Do you pay attention to blood glucose monitoring in the postoperative period?**”, 127 (69.0%) of them answered “yes” and 57 (31.0%) of them answered “no”.

“**Do you continue epidural analgesia during postoperative period?”** 86 (46.7%) of them answered “yes” and 98 (53.3%) of them answered “no”.

“About postoperative early oral nutrition procedures”; 154 (85.1%) of the surgeons answered “yes” and 27 (14.9%) of them answered “no”.

When we asked them, “**Time of starting liquid food after surgery?**” 86 (47.0%) of them answered as “on operation day”; 49 (26.8%) of them answered “post-op 1.st day”; 31 (16.9%) of them answered “with the start of bowel sounds”; 17 (9.3%) of them answered “after flatus” (Figure 6).

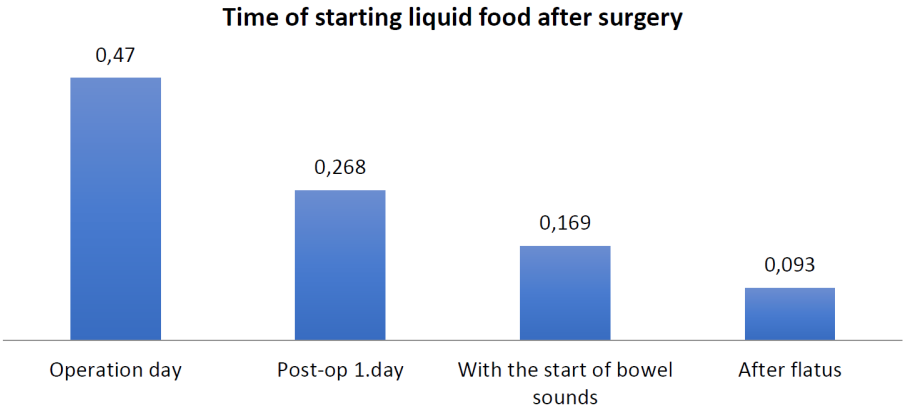

Figure 6. *Time of starting liquid food after surgery*

"Time of starting solid food after surgery?"; 12 (6.6%) of them answered "operation day"; 41 (22.4%) of them answered "post-op 1st day"; 47 (25.7%) of them answered "with the start of bowel sounds" 60 (32.8%) of them answered "after flatus"; 23 (12.6%) of them answered "after gaita" (Figure 7).

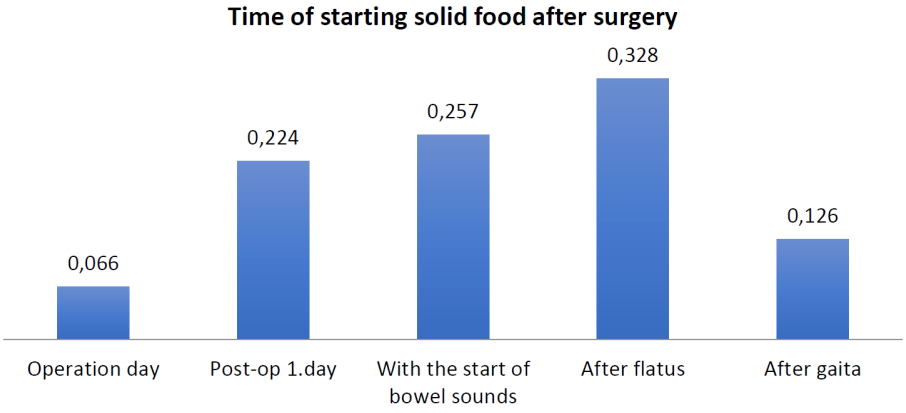

Figure 7. *Time of starting solid food after surgery*

"About early mobilization applications", 126 (69.2%) of them mobilized the patient on the operation day; 54 (29.7%) of them mobilized the patient on the post-op first day; 2 (1.1%) of them answered "later mobilized".

"The question about early discharge"; 140 (76.1%) of the surgeons reported that when bowel functions returned and adequate food intake

and analgesia achieved; 44 (23.9%) of them discharged patients from the hospital after these achieved.

"According to the average hospital stay"; 21 (11.8%) of the surgeons stated that they discharged the patient after the first post operative day; 57 (32.0%) of them discharged after the second day and 41 (23.0%) of them discharged after the third day.

"Why they did not perform fast track surgery"; 38 (23.3%) of them answered "never heard of it"; 53 (32.5%) of them answered "didn't have enough information"; 59 (36.2%) of them answered "don't have enough multidisciplinary and institutional support"; 13 (8.0%) of them answered "they think there is not enough evidence that it is safe and effective".

When the clinics evaluated within themselves, they responded because they thought that there was not enough multidisciplinary and institutional support as the most common reason for fast track surgery in general surgery clinics. It is noteworthy that obstetric clinics do not apply because they never heard about it before; in the urology clinics because they do not have sufficient knowledge (Figure 8).

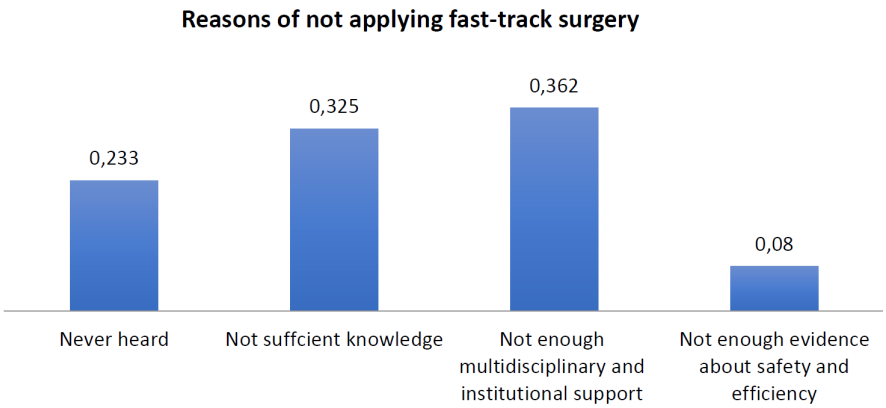

Figure 8. *Reason of not applying fast-track surgery*

DISCUSSION

ERAS is a multimodal, evidence-based perioperative care protocol that reduces cost, complications and reduces morbidity and mortality after major surgical interventions.

The application of ERAS in different intraabdominal organ surgery cases with a single protocol has reduced mortality, length of hospital stay and cost (Fitzgerald, et al., 2016).

Kesici et al (Kesici S, &Turkmen, 2018) emphasized that the surgeons give information to their patients before. According to the results of a multicenter study Martin et al. (Martin et al., 2018) conducted in Sweden and Switzerland in 2017; it is stated that lack of time, reluctance to change and lack of logistic support emphasizes the need for significant changes in all surgical clinics.

According to the same study, when the ERAS team compared with the ERAS protocol applications in the clinical practice in their field, the major rate of change in the practice was 63% of surgeons, 63% of nurses and 35% of anesthetists (Martin et al., 2018). These rates are too high to be ignored and show that it may be difficult to change the methods applied for years in accordance with the ERAS protocol. When we look at the data obtained in our study, although the awareness rate is high, the implementation rate of ERAS protocols is low.

We included surgeons who work in general surgery, gynecology and urology departments in four different centers in Istanbul. ERAS protocol is a very large teamwork consisting of surgeon, anesthesiologist, physiotherapist, dietician and nurse. The leader of ERAS team must be the surgeon in order to lead the procedures that process optimally. The goal of this survey is to measure the awareness of surgeons before fully implemented the protocol.

Unlike the surgeons in Walter et al. (Walter et.al., 2006) study, who never heard of fast track application, the surgeons in our study stated that they would have difficulties in practice due to this multidisciplinary approach.

Due to this multidisciplinary approach, implementation difficulties are experienced. In order to overcome the difficulties in practice, it is necessary to raise awareness of all members of the team and to carry out studies involving the whole team(Walter et.al., 2006).

Factors belonging to the patient, health care workers and logistic support should be determined and clinical studies should be carried out strictly on these issues(Slim et.al., 2016).

Melnyk et al.(Melnyk et al., 2011), showed that there are still difficulties in

adapting the evidence-based guidelines to routine practice(Melnyk et al., 2011; King et al., 2006; Gouvas et al., 2009). In our study, the approach and awareness rates of surgeons in different units are different than each other, which can explain the reason for these difficulties in our country.

As a result; In this study, it is shown that the majority of surgical teams still prefer the classic approach and lead the approaches in their field, but have little experience about the other components of protocol.

Since the implementation of ERAS protocols depends on multidisciplinary and institutional structure, it is shown that these protocols are very difficult to implement.

Table 1: ERAS(Enhanced Recovery After Surgery) / Fast Track 'Surgical Awareness Questıonnare Form

Could you please answer the following questions about your and / or your clinic's approach to elective open abdominal surgery?

1-Who answered the questionnaire?;
◯ Specialist ◯ Resident

2-Does your patient receive pre-operative information and training about the disease, its duties (nutrition, mobility, breathing exercises, etc.) and the surgical procedure to be performed and the principles required by the surgical procedure?

◯ Yes ◯ No

3-Do you make bowel prep. and how?

◯ No

◯ Yes, with oral purgative

◯ Yes, with enema

◯ Yes, both

4-What is the effect of bowel preparation on anastomotic leakage?

◯ Increases

◯ Decreases

◯ Does not affect

5-What is your application for fasting before surgery?

◯ Liquid food for the last few days and hunger after the last midnight

◯ Interruption of oral intake at midnight after normal dinner the last day

◯ Stop giving solids 6 hours before surgery, liquids 2 hours before operation

◯ Other

6-Do your patients receive pre-operative premedication (anxiolytic or analgesic, etc.)?

◯ Yes ◯ No

7-Do you apply prophylaxis to your patients in terms of thromboembolism?

◯ Yes, with LMWH

◯ yes, with compression stockings

◯ sometimes

◯ No

8-In the anesthesia protocol;

◯ I do not interfere with anesthesia, I leave it to the preferences of anesthesiologists

◯ I recommend the use of short-acting drugs (propofol, remifentanil)

◯ I recommend the use of long-acting drugs (morphine, fentanyl)

9-Do you request an epidural catheter?

◯ Yes ◯ No

10-Surgical incision;

◯ I prefer incisions as small as possible.

◯ I prefer to have a large incision and work comfortably and safely

11-Do you keep the nasogastric tube routinely for more than 4 hours after surgery?

◯ No

◯ Yes, till next morning

◯ Yes, two days or more

◯ Yes, till the start of bowel movement

12-Are you careful not to experience intraoperative hypothermia?

◯ Yes ◯ No

13-Do you impose any restrictions on perioperative fluid replacement?

◯ Yes ◯ No

14-About the placement of drains after routine surgery;

◯ I put the drain

◯ I don’t put the drain

◯ I decide on the progress and type of operation

15-Do you use prokinetic agents or prophylaxis for postoperative nausea and vomiting?

◯ Yes ◯ No

16-Do you apply any restrictions on postoperative IV fluid replacement?

◯ Yes ◯ No

17-Do you avoid the use of opiates for ileus prophylaxis?

◯ Yes ◯ No

18-Do you routinely use a drug such as oral magnesium oxide for ileus prophylaxis?

◯ Yes ◯ No

19-Do you follow up blood sugar levels in the postoperative period?

◯ Yes ◯ No

20-Can you routinely continue epidural analgesia after your patient is transferred to the patient room?

◯ Yes ◯ No

21-Do you have any idea about combined or balanced analgesia?

◯ Yes ◯ No

22-Do you start oral feeding in your patient on the first postoperative day?

◯ Yes ◯ No

23-When does your patient start to take liquid food after surgery (drinking water)?

◯ Operating day

◯ Post-op 1st day

◯ With the start of bowel sounds

◯ After flatus

◯ After gaita

24-When does your patient start receiving solid food after surgery?

◯ Operation day

◯ Post-op 1st day

◯ With the start of bowel sounds

◯ After flatus

◯ After gaita

25-Do you provide nutritional support to your patients for the first 5 days after surgery (without malnutrition)?

◯ No

◯ Yes: with oral nutritional formulas

◯ Yes: parenteral

◯ Yes: From the nasogastric tube feeding

26-When do you start to mobilize patients?

◯ Operation day

◯ Post-op Day 1

◯ Mobilize later

27-Do you discharge your patient immediately when bowel functions return (gas / stool output) and adequate food intake and analgesia are provided?

◯ Yes ◯ No

28-In an uncomplicated case, how many days are your patients' average hospital stay?

◯ .....

29-If you do not yet apply the 'fast track' surgical principles, which of the following may be the cause?

◯ I never heard before

◯ I don't have enough information

◯ I think there is not enough multidisciplinary and institutional support for its implementation.

◯ I think there is not enough evidence that it is safe and effective

REFERENCES

Bardram, L., Funch-Jensen, P., Jensen, P., Crawford, M. E., & Kehlet, H. (1995). Recovery after laparoscopic colonic surgery with epidural analgesia, and early oral nutrition and mobilisation. *Lancet* (London, England), 345(8952), 763–764. doi.org/10.1016/s0140-6736(95)90643-6

Fitzgerald, T. L., Mosquera, C., Koutlas, N. J., Vohra, N. A., Edwards, K. V., & Zervos, E. E. (2016). Enhanced Recovery after Surgery in a Single High-Volume Surgical Oncology Unit: Details Matter. *Surgery research and practice*, *2016*,6830260. doi.org/10.1155/2016/6830260

Gouvas, N., Tan, E., Windsor, A., Xynos, E., & Tekkis, P. P. (2009). Fast-track vs standard care in colorectal surgery: a meta-analysis update. *International journal of colorectal disease*, *24*(10), 1119–1131. doi.org/10.1007/s00384-009-0703

Harlak A.,Gündoğdu H., Ersoy E (2008) Approach of Surgeons in AnkaraonAccelerated Recovery After Surgery(ERAS protocol), *National Surgery Journal*, 24, (4).ISSN 1300-0705:182-188

Kesici S.,Turkmen U.A. (2018). Anesthetists and surgeons in ensuring preoperative optimization. *Cumhuriyet Medical Journal*, 2019;Volume41(3),626-636. doi: 10.7197/cmj.vi.585082

King, P. M., Blazeby, J. M., Ewings, P., Franks, P. J., Longman, R. J., Kendrick, A. H., Kipling, R. M., & Kennedy, R. H. (2006). Randomized clinical trial comparing laparoscopic and open surgery for colorectal cancer within an enhanced recovery programme. *The British journal of surgery*, *93*(3), 300–308. doi.org/10.1002/bjs.5216

Ljungqvist, O., & Hubner, M. (2018). Enhanced recovery after surgery-ERAS-principles, practice and feasibility in the elderly. *Aging clinical and experimental research*, *30*(3), 249–252. doi.org/10.1007/s40520-018-0905-1

Martin, D., Roulin, D., Grass, F., Addor, V., Ljungqvist, O., Demartines, N., & Hübner, M. (2018). A multicentre qualitative study assessing implementation of an Enhanced Recovery After Surgery program. *Clinical nutrition (Edinburgh, Scotland)*, *37*(6 Pt A), 2172–2177. doi.org/10.1016/j.clnu.2017.10.017

Melnyk, M., Casey, R. G., Black, P., & Koupparis, A. J. (2011). Enhanced recovery after surgery (ERAS) protocols: Time to change practice? *Canadian Urological Association journal=Journal de l'Association des urologues du Canada*, *5*(5), 342–348. doi.org/10.5489/cuaj.11002

Slim, K., Delaunay, L., Joris, J., Léonard, D., Raspado, O., Chambrier, C., Ostermann, S., & Le Groupe francophone de réhabilitation améliorée après chirurgie (GRACE) (2016). How to implement an enhanced recovery program? Proposals from the Francophone Group for enhanced recovery after surgery (GRACE). *Journal of visceral surgery*, *153*(6S), S45–S49. doi.org/10.1016/j.jviscsurg.2016.05.008[11]

Walter, C. J., Smith, A., & Guillou, P. (2006). Perceptions of the application of fast-track surgical principles by general surgeons. *Annals of the Royal College of Surgeons of England*, *88*(2), 191–195. doi.org/10.1308/003588406X94940