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Perioperative nutrition according to the ERAS protocol

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Abstract

Protocol ERAS - "Enhanced Recovery after Surgery" - is a modern multidisciplinary formula of perioperative care to improve treatment outcomes. Over the past few years, many attempts have been made to implement recommendations for the management of patients in the perioperative period. They were primarily aimed at improving the results of treatment of patients undergoing surgery, and thus shorteninglength of stay in hospital, and - as a consequence - reducing the risk of developing complications and even the number of deaths.

One of the first author who noticed effectiveness of multimodal treatment for a faster recovery and a shorter stay in the hospital was Professor Henrik Kehlet from the University of Copenhagen. He emphasized that in order to understand the nature of complications occurring in patients undergoing surgery, the basis of the factors responsible for the response to the surgical trauma should be known. In the late 1990s, Kehlet postulated that steps should be taken to introduce a comprehensive program including, among others: effective anesthesia, early rehabilitation of the patient, reduction of surgical stress, or quick restoration of nutrition via the gastrointestinal tract.

The comprehensive perioperative care protocol for improving the treatment results requires the need for cooperation of specialists and all medical staff related to perioperative care - not only a surgeon or anesthetist, but also a physiotherapist or dietitian.

Introduction

The comprehensive perioperative care protocol - ERAS (enhanced recovery after surgery) was disseminated at the end of the 90s of the last century. At the base of its formulation are the observations of Professor Henrik Kehlet - a Danish surgeon who in 1995 published his considerations on post-operative care, which caused a significant stir in the surgical world. He indicated that some perioperative procedures, for years used in colorectal surgery, have no confirmation in scientific research and suggested the introduction of new solutions (1). The most controversial proposals at that time included, among others, the non-use of intensive pre-operative bowel preparation or the early supply of oral foods (2). Research results have been published which indicated that early nutrition and activation as well as proper analgesia reduce the time of hospitalization and, most importantly, reduce the incidence of complications (3). Official recommendations have been formulated by a group of researchers who have analyzed perioperative care research.

The ERAS protocol is aimed primarily at doctors of "professional disciplines" - they are the ones who qualify and prepare the patient for surgery. However, for the proper functioning of ERAS, it is necessary to cooperate with all personnel involved in the care - surgeon, anesthesiologist, nurse, dietitian and physiotherapist (3).

Review of the literature

The protocol includes: recommendations for pre-operative preparation and consultation, no preparation of the intestine, recommended preoperative carbohydrate drink, no premedication, no nasopharyngeal tube, use of epidural anesthesia, recommended short-acting anesthetics, restriction of sodium and fluids, laparoscopic preferences, prevention of hypothermia, prevention of post-operative nausea and vomiting, early start-up, analgesic therapy based on non-opioid drugs, early oral feeding, early catheter removal from the bladder, evaluation of the implementation of the protocol and results of treatment (4). Recommendations - ERAS circle - are shown in figure 1.

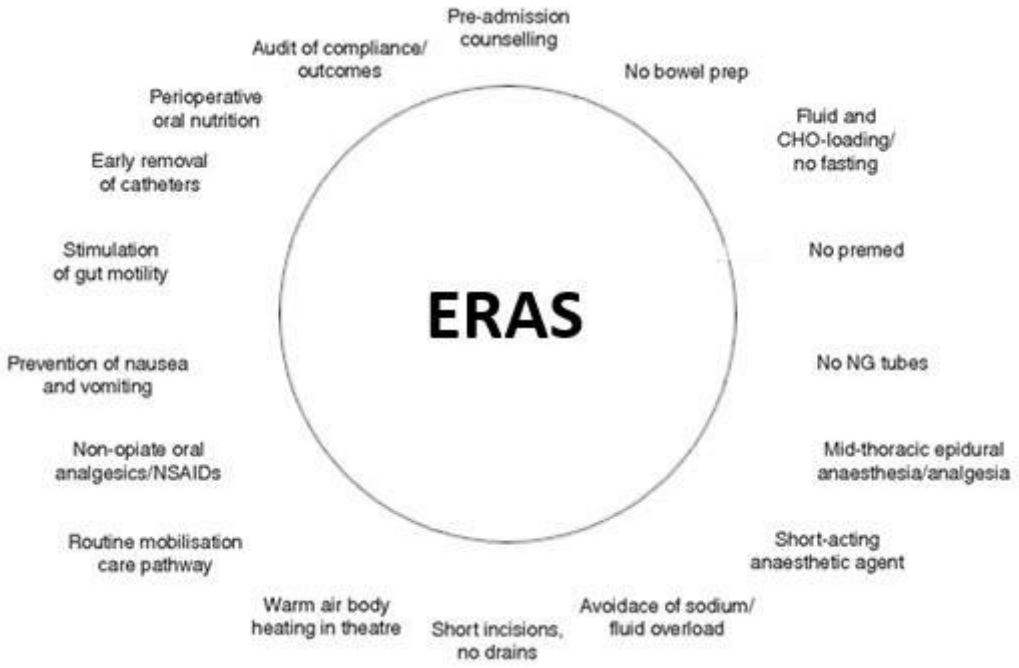

Fig. 1. ERAS circul (5)

Classical perioperative management is usually based on recommendations based on Evidence Based Medicine, but according to Eminence Based Medicine, the recommendations of the head and the known habits are resolved. Often, routine and habit is the introduction of the stomach probe, late oral feeding, prolonging the stay in the hospital despite the absence of any complications (6).

Recent advances in the understanding of perioperative pathophysiology indicate that many factors contribute to post-operative morbidity, length of stay in the hospital and convalescence. A significant improvement in surgical results may therefore require multidimensional interventions (7). (Fig. 2).

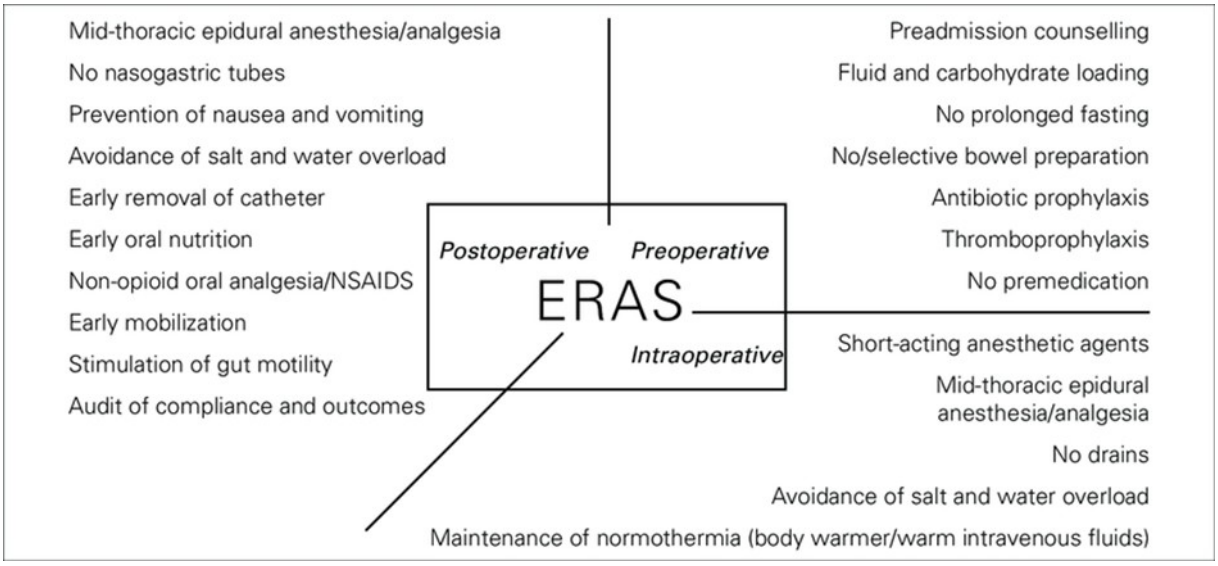

Fig. 2. Recommendations of the ERAS protocol - division of perioperative care recommendations (8)

Each patient qualified for elective surgery, in addition to a surgical consultation, undergoes anesthetic consultation. The protocol assumes that these consultations take place about 2 weeks before the planned surgery. The preparation of dietary guidelines also plays an important role. Unless a surgeon or dietitian recommends a nutritional intervention in the form of a special medical preparation, it is suggested that in the pre-operative period do not use radic diets, drink a minimum of 2 liters of liquids a day, do not consume alcohol, do not smoke (3). The patient should be encouraged to increase his physical activity - every day, 30 minutes of physical activity of moderate intensity increases the efficiency of the cardiovascular and respiratory system, for which surgery is a significant burden. The study by Singh and colleagues from 2013 underlines that increasing physical performance prior to elective surgery may reduce postoperative complications, shorten hospitalization time and improve quality of life (9-12).

In 2011, the guidelines of the Europen Society of Anaesthesiology were published, according to which an anaesthetized patient for scheduled surgery should stop taking solid food for 6 hours and clear liquids for 2 hours before surgery. The guidelines clearly stress that prolonged starvation to reduce the supply of fluids is not important in minimizing the risk of complication complications. It was pointed out that longer starvation has a negative impact on the treatment results - it increases perioperative insulin resistance, has a negative effect on the nitrogen balance and worsens the patient's life comfort (3).

Maintaining fluid balance is one of the basic issues of the perioperative period. Experiences from recent years, supported by research, confirm that commonly used liberal fluid therapy can contribute to the occurrence of many postoperative complications. Fluid overload carries the risk of tissue edema. What impedes the healing of intestinal anastomoses and delays the return to motor function of the intestine (4, 5). Excessive fluid supply also puts strain on the cardiovascular system, increasing the risk of pulmonary complications and adversely affects the coagulation system.

The ERAS protocol abandons intensive intestinal preparation before colorectal surgery. This has a significant impact on the hydration status of the patient before surgery (3). In the traditional approach, the patient who was being prepared for surgery, did not eat food a day before the procedure, drank mineral water and a specially prepared osmotic drink that was cleansing. This led to a condition in which the patient was dehydrated. By renouncing such a procedure and even by encouraging the patient to properly nourish and hydrate before the procedure, his water and electrolyte balance should be correct. According to the ERAS recommendations, the patient should start taking orally 2 hours after the operation.

Summary

The procedure of the ERAS protocol must be individualized, adapted not only to the patient's condition but also to the capabilities of the medical care system. Its multidirectional character imposes the necessity of cooperation of all medical personnel related to perioperative care.

Recently published pilot studies suggest that when these newer approaches are used in patients undergoing more complex elective surgical procedures, postoperative complications can be reduced, length of hospital stay decreased, and time to recovery shortened. This review of recent advances made in this newly developing specialty of fast track surgery will emphasise techniques that facilitate early recovery after major surgical procedures (7).

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