

ENHANCED RECOVERY AFTER SURGERY: A TRUE REVOLUTION AT COIMBRA UNIVERSITY AND HOSPITAL CENTER

ENHANCED RECOVERY AFTER SURGERY: UMA VERDADEIRA REVOLUÇÃO NO CENTRO HOSPITALAR E UNIVERSITÁRIO DE COIMBRA

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ABSTRACT

A small group of anesthesiologists and surgeons from Coimbra University and Hospital Center became interested in a project developed in northern European countries, the Enhanced Recovery After Surgery (ERAS®) Program. This program is based on training and preparing colorectal surgical patients with excellent results with regard to the decrease of complications, duration of hospitalization and the increase of patient and team's satisfaction. The authors intend to describe the challenge of developing this project at Coimbra University and Hospital Center and display some of the results observed after the implementation of this program in colorectal surgery.

Keywords: *colorectal surgery; general surgery; anesthesiology; enhanced recovery after surgery.*

RESUMO

Um pequeno grupo de anestesistas e cirurgiões do Centro Hospitalar e Universitário de Coimbra interessou-se por um projeto desenvolvido em países do norte da Europa, o Programa Enhanced Recovery After Surgery (ERAS®). Este programa baseia-se no treinamento e preparação de doentes cirúrgicos com patologia colorretal com excelentes resultados no que diz respeito à diminuição de complicações, tempo de internamento e aumento da satisfação dos doentes e da equipe. Os autores pretendem descrever o desenvolvimento deste projeto no Centro Hospitalar e Universitário de Coimbra e apresentar alguns dos resultados observados após a implementação deste programa em cirurgia colorretal.

Palavras-chave: *cirurgia colorretal; cirurgia geral; Anestesiologia; recuperação melhorada após a cirurgia.*



INTRODUCTION

In 2016 a small group of anesthesiologists and surgeons from Coimbra University and Hospital Center developed their interest in a project that had emerged in northern European countries. This project consisted of coaching the surgical patients with colorectal pathology and revealed excellent results with regard to the reduction of complications and hospitalization duration, as well as an increased satisfaction among patients and teams involved. A system with continuous monitoring and auditing were also involved in this project.

Enhanced recovery after surgery (ERAS) represents a paradigm shift in surgical patient care and can result in substantial benefits in both clinical outcomes and cost-effectiveness through optimization of the postoperative recovery process.¹

Postoperative complications after major abdominal surgery have been shown to increase the morbidity and mortality, as well as lower health related quality of life and increased expenditure in health care.² For a range of surgical disciplines, there is published evidence highlighting the effect of ERAS program decreasing in length of stay, complications, and postoperative symptoms.³

It was then that the team questioned: “Will we be able to implement a program of this kind and transpose this Nordic organization to a public Portuguese hospital?”

MATERIAL AND METHODS

After many debates and the participation in some ERAS Society Congresses, this small group decided to give it a try. The first ideas started to appear: “We can do twenty ERAS-type patients, see the results and that’s it.” But another plan was quickly drawn up: “No, we are going to contact the ERAS Society and present our hospital’s candidature to the ERAS program in Colorectal Surgery”.

Thus it began a long and, somehow, painful path to introduce the project, which involved meetings with various health care services and professionals, who would come to join the team, as well as a meeting with the Board of Directors of the hospital.

After the Board of Directors’ approval, a team was created to start implementing the ERAS project in Colorectal Surgery and it began the training of health professionals in the area of Enhanced Recovery After Surgery.

ERAS® Society appointed Centre of Excellence is a centre that has completed an ERAS® implementation program and has qualified as a teaching centre for the implementation program. In Portugal Hospital Beatriz Ângelo is Center of Excellence.

Our trainings took place at *Hospital da Luz* in Lisbon, organized by a group from Hospital Beatriz Ângelo. This training phase began in May 2018 and ended in March 2019. Our hospital teams became certified in ERAS in July 2019. Another certified centers in Portugal are: Hospital de Cascais, Hospital Fernando Fonseca, Centro Hospitalar Lisboa Ocidental, Hospital da Luz Lisboa. It should be noted that, initially, Coimbra University and Hospital Center was the first Portuguese hospital, without a public private partnership, to have this training.

After all this preparation, it was time to demonstrate that we were ready for this challenge, although we were aware of the difficult path waiting for us.

Audit is one of the most important items of ERAS program. Certified centers have access to Encare platform and the ERAS Interactive Audit System (EIAS) international database. In this platform we have to insert information of all patients – it’s about 140 items: demographic data, pre-operative information, optimization that are done, intra-operative data, and postoperative information such as medication, fluids, time out of the bed. Our first big problem was to collect data – we still had at the beginning paper registration. Just in final 2019 we had all information with online registration. Audit permits to monitor our adherence to ERAS



International Guidelines, and by this way monitor what we are doing, and this is the way to know our compliance to guidelines.

RESULTS

The initial audit was carried out in the pre-ERAS phase for Colorectal Surgery, concluding that there was a total compliance of 24.5% to ERAS guidelines, with a preoperative compliance of 48.4%, intraoperative of 28.6 % and postoperative of 10.9%. The median number of hospitalization days was 8 days. It was also perceived that many parameters of clinical importance were impossible to analyze, due to the absence of registers.

So, it was necessary to improve the register of some important parameters for the ERAS Interactive Audit System (EIAS) international database, prepare pre-defined therapeutic plans and develop diets with the appropriated number of calories required for each phase of the perioperative period, in accordance with the ERAS guidelines.

Several protocols were also created, for instance: ERAS Acute Pain Protocol (with the purpose of effective pain relief in order to allow an early postoperative mobilization, quicker return of intestinal function and oral diet), Colorectal Surgery Protocol ERAS and ERAS Anesthesiology Protocol. Information flyers were made for patients and their families, and a “green way” was developed for complementary diagnostic tests.

Thus, an ERAS circuit was created for colorectal surgical patient, consisting of six phases: Phase 1 – Preoperative assessment and preparation; Phase 2 – Hospital admission of the patient; Phase 3 – Intraoperative; Phase 4 – Postoperative in the Postoperative Care Unit; Phase 5- Hospitalization in the hospital ward and discharge; Phase 6 – Post-discharge.

Regarding Phase 1, it was necessary to create a multidisciplinary consultation day called “ERAS Day”. During this consultation, the patient is

observed by several health care professionals in the same physical space which includes six consultation offices and secretarial support. It is also, at this time that complementary diagnostic tests, including iron kinetics, are carried out. Therefore, on “ERAS Day”, patients are observed in five or six consultations, such as: Nursing, Anesthesiology, Nutrition, Physiatrics (where it is taught how to use the spirometer and where it is developed, in articulation with the Primary Health Care Services, a plan with other kinesiotherapy exercises and other types of exercises, which the patient should practice until the day of the surgery), Social Work and Immunohemotherapy (if the patient has been referenced by the Anesthesiologist as having anemia, hence starting the treatment in Day Hospital Care).

During this day, information flyers and an ERAS Guide to Colorectal Surgery, are given out to patients and their families to help them understand and prepare for surgery and hospitalization.

Subsequently, all multidisciplinary team members, will draw an optimization plan for each patient in a Therapeutic Decision Meeting.

For this entire circuit to be possible, it was necessary to work with different medical specialties and professionals, such as: Pulmonologists, Cardiologists, Immunohemotherapists, Physiatrists, Physiotherapists, Pharmacists, Endocrinologists, Nutritionists and Social Workers.

The ERAS program cemented a culture of team work between health care professionals and services, focused on the surgical patient, with action protocols and rigorous planning of the perioperative period, with the purpose of accomplishing very specific objectives.

At Hospital admission of the patient (phase 2) were introduce liquids with carbs for oral intake until 2 hours before going to the Operating room.

In Phase 3 – Intraoperative – anesthetic protocols were implemented, with the goal of early mobilization of the patient. Surgical protocols were also standardized – drains were eliminated except in rectal surgery. Surgeries are mainly laparoscopic.



Postoperative in the Postoperative Care Unit (phase 4): early mobilization at 2 hours, and oral intake at 4 hours.

In Phase 5 – Hospitalization in the hospital ward and discharge – mobilization since PO 0 oral and caloric intake, fluids, early urinary drains were taken.

In the Post-discharge phase (phase 6), there are follow-up consultations both 48h and 30 days after discharge. These consultations are carried out by the ERAS nurses, who also provide a mobile phone contact, available from 8:00 am to 4:00 pm, to clarify any patients' doubts.

Schedules were also assigned to the ERAS nurses, so that an exclusive dedication to this program could be possible.

Patients included in ERAS protocols to colorectal surgery are adult patient >18 years, proposed for elective surgery in which will have intestinal anastomosis, oncological and non-oncological surgery.

In May 2019, ERAS circuit was tested on 25 pilot patients and, subsequently, 100 patients were admitted into this protocol. And since that moment, all patients proposed for this type of surgery in our hospital are included in the protocol, and registered in ERAS Audit System.

In the Pre-ERAS we had mortality of 1% (audit 100 patients before ERAS program implementation), reoperations of 8.7%, patients with adverse events of 51.9% (44% of nausea and vomiting), patients with severe complications of 9.6% (mechanical bowel obstruction of 3%), anastomotic leaks 3.3%, readmissions of 12.5%. Our compliance to ERAS protocols was of 25.3%.

After ERAS implementation (2019-2021): mortality of 2.1%, reoperations of 8.2%, patients

with adverse events of 43%, patients with severe complications of 9.4%, anastomotic leaks 5.9%, readmissions of 6.2%.

The improvements were substantial, with a total compliance to ERAs protocol of 81.3%, preoperative compliance of 74.3%, intraoperative of 76.7% and postoperative of 87.1%. There was a reduction in the median hospitalization days to 5 days.

CONCLUSION

About 500 patients have benefited from this program, with excellent results and an obvious decrease in the number of hospitalization days, as well as an earlier mobilization after surgery with a quicker recovery in the daily activities and an increase in their well-being and satisfaction.

This program has brought a uniformity in the way patients are treated, with a system of constant monitoring and auditing, which allows a reduction in complications and a total compliance above 75%.

The Coimbra University and Hospital Center's ERAS group is currently training teams that will be responsible for the Hepatic and Bariatric Surgery's ERAS program in our hospital. Our team's intention is to extend the ERAS program to other surgical areas, always focused on maintaining a high compliance rate and a constant improvement in this program.

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