

Implementation of a Multimodal Rehabilitation Program in an Esophago-Gastric, Hepatobiliar and Pancreatic Surgery Unit

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Background

Multimodal Rehabilitation (MMR) in oncological surgery is a novel concept whose core focus is perioperative patient care, based on the evidence generated in the last 3 decades in relation to the Early Recovery After Surgery (ERAS), which has evolved after the implementation of pre, intra and post-operative interventions; In this way, its purpose is to reduce postoperative morbidity and mortality as well as reduce hospital stay. There is still a lack of evidence in relation to the intervention of MMR in Esophageal-Gastric, Hepatobiliary and Pancreatic Oncological Surgery. In the present series of cases, we proceed to evaluate the clinical characteristics, degree of compliance and post-operative results after the implementation of an MMR program in EG and HPB oncological surgery.

Keywords: Multimodal rehabilitation

Introduction

The Fast-Track in surgery or ERAS; are a series of measures taken in order to reduce surgical stress, which covers different arms, among which minimally invasive procedures with less tissue damage and as a consequence less morbidity and mortality are relevant [1]. The implementation of guidelines and measures in this line, since the 90's have greatly revolutionized the classic management of post-operative patients. Likewise, in the last decade, new interventions have been added to the classic fast-track, implementing a set of recommendations that are grouped under the so-called multi-modal rehabilitation. Appraisal of nourishment, physical activity, pain and stress management are the fundamental pillars. All these measures have been implemented in recent decades, in relation to scientific evidence, in different studies and meta-analyses. Furthermore, these have made it possible to endorse its importance and performance in reducing morbidity and mortality in patients undergoing surgery [2]. Despite this, even with the current evidence, it is difficult to implement these novel interventions, mainly due to inherited customs in the field of surgery. The recommendations in this sense are to adapt them progressively so that they will be accepted by the most skeptical [3,4].

Case Series

The present case series were taken from our hospital, the data collection was retrospective, observational and descriptive. The pre, per, and postoperative measures designed in the MMR Protocol of the EG and HPB Surgery Unit were applied. This protocol was standardized to be used in all patients with oncological pathology requiring surgery, the analysis includes all patients since its implementation during the first quarter of 2022. Forty-five patients were included in the MMR case series. We present the descriptive analysis of the MMR implementation in the following table 1.

Table 1

| Variable | Descriptive Measures | |
|------------------------------------|----------------------|-------------------|
| Age | 71 (median) | 34-89 (range) |
| BMI | 25,8 (median) | 16,2-37,5 (range) |
| Sex | n ° | % |
| Men | 25 | 55 |
| Women | 20 | 45 |
| ASA Index | n ° | % |
| I | 2 | 4,4 |
| II | 29 | 64,4 |
| III | 12 | 26,7 |
| IV | 2 | 4,4 |
| MUST Index (nutrition tool) | n ° | % |
| Low risk | 31 | 68,8 |
| Moderate risk | 7 | 15,6 |
| High risk | 7 | 15,6 |
| Frailty | n ° | % |
| Non-frailty | 20 | 44,4% |
| Pre-frailty | 19 | 42,2% |
| Frailty | 6 | 13,3% |
| Smoking habit | n ° | % |
| Non smokers | 23 | 51,1 |
| Non smoker >2years | 15 | 33,3 |
| Active smoker | 7 | 15,6 |
| Enolism | n ° | % |
| Active enolism | 7 | 15,6 |
| Non-drinker | 38 | 84,4 |
| Type of surgery | n ° | % |
| Pancreatic surgery | 15 | 33,3 |
| Liver surgery | 11 | 24,4 |
| Gastric surgery | 9 | 20 |
| Other surgeries | 10 | 22,2 |
| Clavien-Dindo (complication class) | n ° | % |
| I | 18 | 40 |
| II | 21 | 46,7 |
| IIIa | 3 | 6,7 |
| IIIb | 1 | 2,2 |
| IV | 1 | 2,2 |
| V | 1 | 2,2 |
| Surgical approach | n ° | % |
| Open | 14 | 31,1 |
| Laparoscopic | 7 | 15,6 |
| Robotic | 21 | 46,7 |
| Protocol compliance | n ° | % |

| | | |
|-----------------------|------------|--------------|
| 25% | 1 | 2,2 |
| 50% | 4 | 8,9 |
| 75% | 17 | 37,8 |
| 100% | 23 | 51,1 |
| Readmission (30 days) | n ° | % |
| No | 42 | 93,3 |
| Si | 3 | 6,7 |
| Hospital stay | 7 (median) | 1-37 (range) |

Discussion

In the last 3 decades, a new concept of perioperative patient care in different types of surgical procedures have been developed and evaluated [5,6]. These interventions have been named as "Fast Track Surgery", ERAS and recently MMR, all of them with the only purpose of reducing the impact of surgical stress, postoperative complications, and readmission rates, without interfering with the surgical process [7,8]. Most studies have focused on patients who underwent colonic surgery [9], therefore there is less evidence in patients with upper GI (EG-HPB) oncological pathology.

Liver Resection

A recent systematic review and modified Delphi consensus [10], has drawn up a series of recommendations based on the evidence available up to the year 2020. Of these, 9 with a high level of evidence: Pre-operative measures: Cessation of alcohol intake and smoking, evaluation and improvement of nutritional status. Peroperative interventions: early nutrition, Tap-block (analgesia), avoiding the use of a nasogastric tube and intra-abdominal drains, correct glycemic control, medication to prevent postoperative nausea and vomiting, and strict control of fluid therapy.

Pancreatic Resection

The systematic review carried out by Melloul E et al. [11] describes, in relation to the literature and expert consensus, 5 recommendations with the highest level of evidence: Avoid hypothermia, use of catheters in the wound (analgesia) as an alternative to epidural analgesia, use of antithrombotic, antimicrobial and nutritional prophylaxis protocols. In this way, it concludes that the implementation of these measures could reduce complications, costs and hospital stay.

Gastric Resection

Mortensen and the ERAS Society working group have established a series of recommendations: Among them, 6 with a high level of evidence: Pre-operative fasting for fluids of 2 hours, use of the thromboprophylaxis and perioperative antibiotic therapy protocols, avoid hypothermia, strict management of fluid therapy, removal of urinary catheters on the first postoperative day [12].

Conclusion

The present case series, show us a high prevalence of oncological patients who underwent surgery with high nutritional and surgical risk and non-negligible frailty. The degree of compliance with the MMR protocol in this series has improved over time, reaching

100% in more than half of the cases. Morbimortality was within the expected ranges. The results of this study demonstrate the feasibility of implementing a MMR program in EG-HPB oncological surgery. The current evidence on MMR in EG and HPB surgery is scarce and lacks standardization, it is necessary to generate evidence and provide studies in relation to this field of surgery. The degree of compliance with the MMR is essential and auditing is fundamental to generate future clinically useful contributions.

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