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Postoperative nutritional recovery in adult oncology patients: A literature review

Recuperação nutricional pós-operatória em paciente oncológico emidade adulta: Revisão de literatura

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ABSTRACT

It is known that the preparation of the surgical patient in his nutritional context brings clear results regarding the postoperative evolution. Such knowledge, already based on the literature, gains even more emphasis when a population cut is made from the perspective of cancer patients, thus, good postoperative nutritional management is necessary. For this work, an integrative systematic review based on six steps was chosen. We chose to use the PICOT method, formulating the question to be answered in this review: "Is it possible to perform clinical and nutritional measures in the postoperative period to assist the adult oncology patient in recovering from the surgical procedure, reducing the number of complications and length of hospital stay?" For the temporal cut-off of this work, articles published between the years 2013 and 2023 were used. In addition, for the choice of articles, texts in English and Portuguese were selected. After pre-selection and selection by applying the inclusion and exclusion criteria, twenty-nine (29) articles were identified, of which two (2) are systematic reviews, four (4) observational studies, one (1) prospective qualitative studies, fifteen (15) controlled clinical trials, and seven (7) meta analyses. The literature supports that early recovery of oral diet, even at low initial rates (daily energy sufficiency >25%), improves nutritional status as well as reduces mortality. Another alternative presented by studies for the definition of feeding routes is the definition of enteral tube insertion. Although it is not preferable, because one should always seek the food route closest to the physiological one, parenteral nutrition is often necessary. Postoperative nutritional supplementation, both parenteral and enteral, with polyunsaturated fatty acids (PUFA), such as omega-3, associated with amino acids such as glutamine and arginine, has shown statistical relevance in reducing secondary infectious complications in the postoperative period. Studies still differ on the reduction in mortality compared to standard enteral nutrition. More robust studies may be needed to rule out or impose such a nutritional supplementation practice. There is still an attempt to supplement total protein in oral and enteral diets in an attempt to improve postoperative recovery. The association of a high protein diet in the immediate postoperative period with the concomitant use of dietary fiber (Fructooligosaccharide dietary fiber) has also been studied. The number of patients with late diagnosis in advanced oncologic stages is still a worrisome reality, especially after the advent of COVID-19. Postoperative care for nutritional rehabilitation lacks

more robust studies to indicate with greater certainty a general management protocol. immunomodulation therapies may show good response when used in the postoperative period.

Keywords: Nutritional therapy, Postoperative Period, Gastrointestinal Neoplasms.

1 INTRODUCTION

It is known that the preparation of surgical patients in their nutritional context brings clear results regarding postoperative evolution, both in terms of clinical complications (such as secondary postoperative infections), as well as complications inherent to the surgical procedure itself (such as fistulas and anastomotic dehiscence).[1,2] Such knowledge, already grounded in the literature, gains even more emphasis when made a population cut on the perspective of cancer patients, since the natural course of the disease itself provides in many cases a consumptive syndrome, which further depletes the patient's physiological reserves that are essential for postoperative recovery.[2]

Consequently, after the advent of the Covid-19 pandemic, there was in the service of the Hospital Regional de Presidente Prudente the empirical perception that oncological conditions have been diagnosed in more advanced oncological stages with apparent deterioration of the nutritional profile of patients, which, in turn, ends up influencing even the decision making regarding the type and time for the initial surgical approach, when in curative possibility; This empirical finding, even so, could be a biased analysis due to the degree of complexity of the cases and because this is a regional reference hospital.[3,4,5] However, the literature has pointed out similar observations in other healthcare settings.[3,4,5]

From this observation, an unfavorable horizon is assumed, in which it will be very common the oncological diagnosis already in advanced nutritional deterioration, making the clinical management of cases difficult.[5] Therefore, even though the literature sustains that many times there is benefit in reducing complications by delaying the surgery for better preoperative preparation, there are cases in which the procedure should be performed and, thinking about these cases, good postoperative nutritional management is necessary.[1]

2 METHODOLOGY

The systematic integrative review was chosen based on six steps for this work, namely: identification of the topic and selection of the research question, creation of inclusion and exclusion criteria, identification of pre-selected and selected studies, categorization of studies, analysis and interpretation of results, and synthesis of accumulated knowledge.For example, even

though different databases were used, the number of articles searched is still unable to extinguish the doubts inherent to the subject due to the still small number of published articles. Moreover, it is noted that most studies may have biases, such as the great variability of ages and histological presentations of the neoplasms involved, and the methodology applied did not have sufficient capacity to remedy all these possible influences.[6]

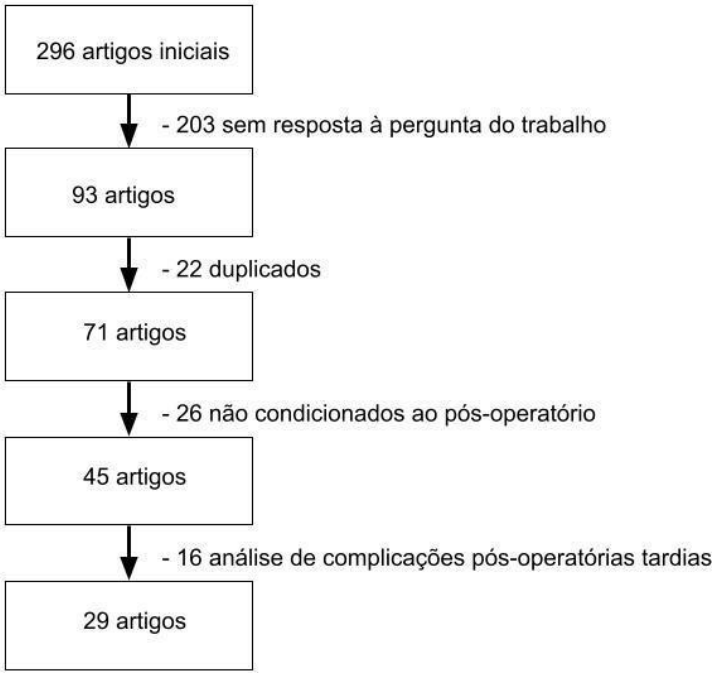
Two methods for defining the problem and formulating the clinical question can be applied, PICOT and PICOD, based on the delineation of each acronym: PICOT (P) consider the target population, (I) consider the interest of the intervention or the area of interest, (C) compare types of intervention or groups, (O) obtain results and consider the effects to be achieved with the intervention, (T) consider the time needed to obtain the result; having as a differentiation for the PICOD method only the last step, in which the temporal relationship is no longer observed (T), and the focus becomes the study design (D).[6] Given this, it was chosen to use the PICOT method.[6] Therefore, as already pointed out in the introduction, the perception of a health problem is the preparation of pre- and postoperative adult oncology patients from the nutritional perspective, and therefore, the fundamental question is: "Is it possible to perform clinical and nutritional measures in the postoperative period to assist the adult oncology patient in recovering from the surgical procedure, reducing the number of complications and length of hospital stay?

Furthermore, for the choice of articles, texts in English and Portuguese were selected and, for the selection of descriptors, the validation of the online platform of the Virtual Health Library Brazil was used, and the following keywords were chosen: Nutrition Therapy, Postoperative period, Gastrointestinal Neoplasms; as well as their respective terms in English: Nutrition Therapy, Postoperative period, Gastrointestinal Neoplasms. It was chosen to perform the search using the operative word "and" among the descriptors, as well as its respective term in English, "and", thus using the combination of the three key words simultaneously to search for articles. For the time frame of this study, articles published between the years 2013 and 2023 were used. PubMed, SciELO, Cochrane, and Periódicos Capes were selected for the databases of this study.

Given the above, a total of 296 articles were obtained, of which 203 studies were excluded because they did not answer the theme question of this study, after reading and analyzing the titles and abstracts of the articles until then evidenced in the initial search. Twenty-two (22) articles that were duplicated between database platforms were then excluded. The next step was to exclude articles that did not present temporal discrimination in relation to the introduction of nutritional therapies, which adopted only the term "perioperative", and thus another twenty-six (26) articles were excluded. Finally, another sixteen (16) studies that analyzed only late

postoperative complications after the adopted measures were removed.

Diagram 01: Evaluation of the articles used.

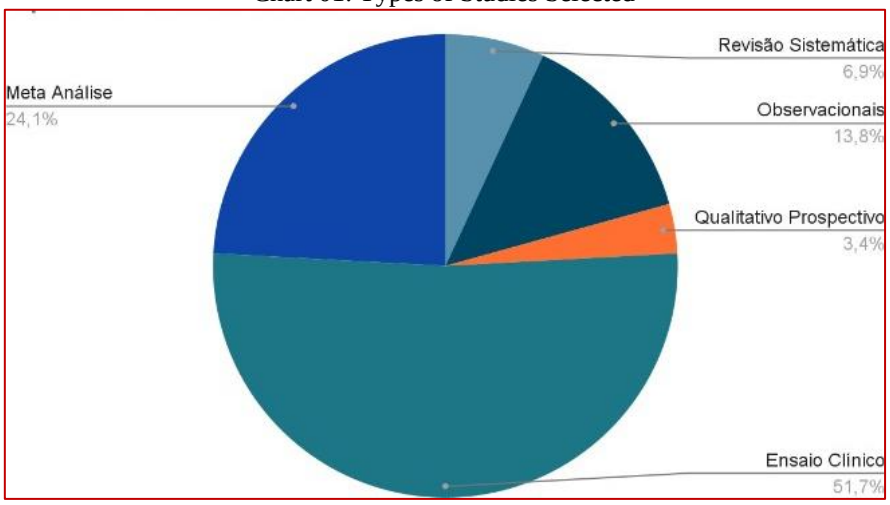


3 RESULTS

At the end of applying the methodology for article selection, twenty-nine (29) articles were identified, of which two (2) are systematic reviews, four (4) observational studies, one (1) prospective qualitative studies, fifteen (15) controlled clinical trials, and seven (7) meta-analyses.

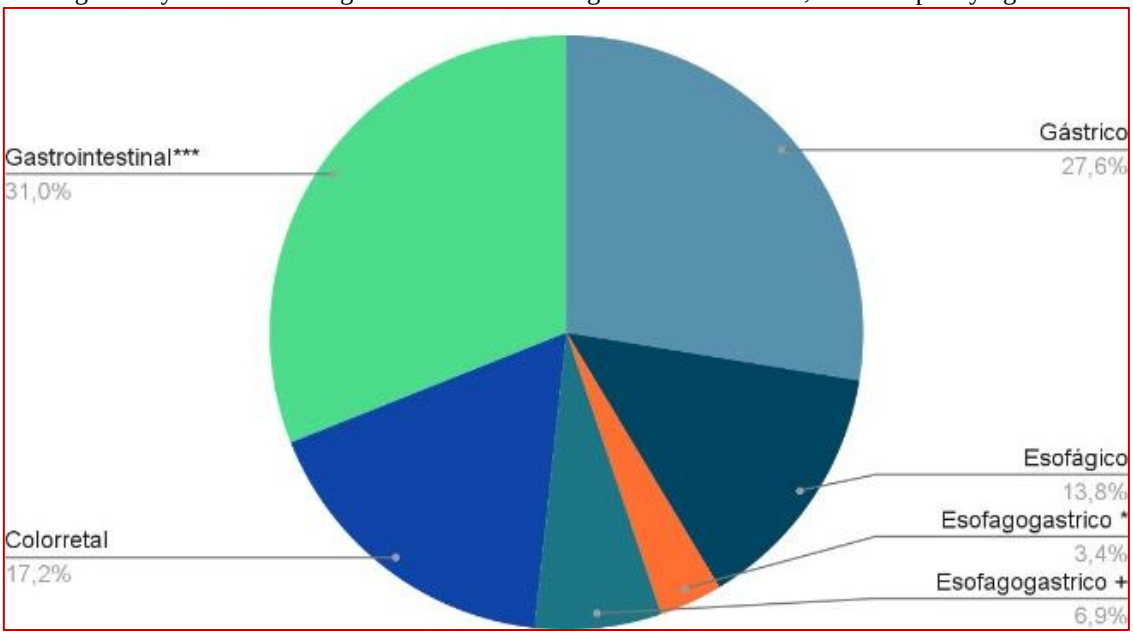
It is important to point out that in this review, six (6) other studies were used for the theoretical foundation of the methodology, contextualization, and grounding of the work in elation to the theoretical and time frame chosen.

Chart 01: Types of Studies Selected



The selected studies are distributed in relation to the primary tumor site as Esophageal (4), Gastric (8), Esophagogastric (1), Esophagogastric and Pancreaticoduodenal (2), Colorectal (5) and Gastrointestinal (9), and in this last group of studies it is not clear the exact number of patients with involvement for each organ of the gastrointestinal tract.

Chart 02: Oncologic Site Addressed by Studies (*Studies do not make clear how many were gastric, esophageal or esophagogastric transition tumors only; ** Study does not specify primary site of involvement or surgery performed; *** Studies generally address oncologic involvement of the gastrointestinal tract, without specifying the exact site).



4 DISCUSSION

This literature review expresses that the vast majority of articles are divided between two major focuses with regard to nutritional rehabilitation of surgical patients with gastrointestinal oncology diagnosis, being: food access route and food supplementation; being noteworthy that the literature sustains that early reestablishment of oral diet, even if in low initial aliquots (daily energy sufficiency >25%), brings improvement in nutritional status, as well as reduced mortality, and should be reestablished preferably in the first 24 to 48 hours.[7'8'9'10'1] Another alternative presented by studies for definition of feeding routes is the enteral tube, as well as intraoperative jejunostomy, showing no difference between the techniques regarding postoperative complications or mortality, although evidence shows that patients undergoing jejunostomy can be maintained on enteral diet for longer periods, thus reducing the need for association with parenteral diet.[12'13'14]

Although not preferable, since one should always seek the food route closest to the physiologic one, parenteral nutrition is often necessary in the nutritional management of the

patient in the postoperative period, even more so when it is unfeasible to return to oral or enteral diet in the first five postoperative days.[15'16'17'18] Therefore, the definition of early initiation, together with diet customization protocols (through software) showed improvement in the nutritional parameters of patients evidenced by albumin and pre-albumin levels, although in the groups evaluated there was no statistical difference for length of stay and relapse rate.[15'16'17'18] Another study even points to the possibility of total bowel rest in the first seven days with total parenteral diet in patients at high risk of losing the mechanical integrity of the anastomosis, undergoing protective ileostomy, although the study has an apparent limitation by the small number of patients involved.[19]

Furthermore, many researchers have tried different modalities of nutritional supplementation, as well as other postoperative care, aimed at improving the metabolic response to trauma.[20'21'2223'24'25'26'27] Some articles have shown that postoperative nutritional supplementation, both parenteral and enteral, with polyunsaturated fatty acids (PUFA), such as omega-3 associated with amino acids, such as glutamine and arginine, have shown statistical relevance in reducing secondary infectious complications in the postoperative period due to their immunomodulatory effect, as well as in reducing inflammatory markers.[20'21'222'23'24'25'26'27] However, studies still differ on the reduction in mortality compared to standard enteral nutrition.[20'21'222'23'24'25'26'27] Other studies point out that supplementation with amino acids such as arginine, or even branched-chain amino acids (BCAAs) may be an option; however, such an approach has not shown statistical relevance to reinforce this clinical practice.[28'29] The early introduction of ecoimmunonutrition (enteral nutrition involving probiotics and immunological nutrients) was also tried, which, although I have shown in the experimental group measurable decrease in inflammatory markers and reduction in the time to onset of flatus elimination compared to the control group, did not show statistical relevance for decrease in complications, nor even reduction in mortality, and more robust studies may be needed to rule out or impose such nutritional supplementation practice.[30'31'32]

There is also the attempt of total protein supplementation in oral and enteral diets in an attempt to improve postoperative recovery, since in this phase there is an increased catabolic state, being noticed in studies that the group of patients undergoing hyperprotein diet showed cumulative nitrogen balance in the first seven postoperative days, which was significantly higher than the findings in the control group, although no difference was noticed in body weight loss or loss of lean body mass.[33'34] The association of early postoperative whole protein diet with the concomitant use of dietary fiber (Dietary Fiber Fructooligosaccharide) was also studied, which

showed agility in the formation of the fecal bolus and decreased edema and abdominal distension, although it did not show changes in hemoglobin and nutritional and inflammatory markers between the first and seventh postoperative days, when compared to the control group.[35]

In addition, one of the articles studied also brings a relevant comparison on the effectiveness between the temporal regimens of immunonutritional supplementation, which are preoperative, perioperative and postoperative in comparison to the standard enteral diet.[26] In this evaluation, it was shown that all regimens have advantages over the standard diet; although the regimen studied as the focus of this review (postoperative) brings benefits mainly with regard to infections secondary to surgery, even so, the preparation of the patient in the perioperative regimen was the one in which the studies pointed out as being the one that brings greater benefits in length of stay and other parameters assessed, and thus the most suitable.

5 CONCLUSION

It is evident, after this review, that postoperative care for nutritional rehabilitation lacks further robust studies to point, with greater certainty, a general management protocol, being still relevant the individualization of each case, although it is possible to point out good alternatives for patients without conditions of long preparation for surgery. In addition, it can be emphasized that the variability of presentations as to the primary tumor site, surgical technique used and local resources of the hospital environment end up greatly affecting the decision about the postoperative therapeutic management.

However, from the analysis of the selected articles, it can be concluded that immunomodulation therapies can show good response when employed in the postoperative period, and are not restricted only to the preparation prior to the approach, especially when looking at secondary infectious complications.

This review shows the need for new studies on the subject, since the number of patients with late diagnosis in advanced oncologic stages is still a worrisome reality, especially after the advent of COVID-19.

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