

# Current need for guidelines in emergency surgery in peritoneal carcinomatosis

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## Abstract

Malignant bowel obstruction caused by peritoneal carcinomatosis is a common complication that affects a large proportion of gastrointestinal and ovarian oncology patients and predicts poor long-term survival. The management strategy for these patients includes a variety of medical therapies and surgical options; however, how to choose the best treatment strategy remains a mystery. The purpose

of this narrative review was to summarize the most recent evidence on multimodal malignant bowel obstruction treatment and determine whether or not progress had been made. We should work to establish consensus guidelines, where possible, to ensure that this unique patient group receives the appropriate treatment or compassionate care during this often terminal event.

## Introduction

Peritoneal carcinomatosis (PC) is identified as the condition in which cancer cells form nodules that grow on the membrane of the parietal and/or visceral peritoneum;<sup>1</sup> peritoneal carcinomatosis is different from primary peritoneal cancer, which is cancer that originates in the peritoneal tissue. It represents an advanced neoplastic disease that usually comes from intra-abdominal neoplasm, but it is not the occurrence of peritoneal metastasis from extra-abdominal primary tumors such as breast cancer and melanoma.<sup>1</sup>

Complications of PC requiring emergency or urgent surgery are the MIO (Malignant Intestinal Obstruction), intestinal occlusion distal to the ligament of Treitz in the presence of a primary intra-abdominal neoplasm or extra-abdominal tumor with peritoneal dissemination. The abdominal neoplasms most commonly associated with MIO are CRC (49.5%) and ovarian neoplasms (21.9%); other primary abdominal tumors that less frequently are associated with peritoneal carcinomatosis are esophagogastric tumors (12%), genitourinary tumor (5%), hepatobiliary tumor (4%).<sup>2-4</sup>

MIO may be due to a condition of ab extrinsic compression from implantation of peritoneal metastases or advancement of intraluminal disease to full wall thickness or involvement of mesenteric nerve plexuses resulting in altered bowel motility. The most frequent symptoms are nausea (100% of cases), vomiting (87-100% of cases), abdominal pain (56-90%), and closed alvo within the last 72 hours.<sup>4</sup>

Palliative surgery for intestinal occlusions from PC has its pros and cons: on the one hand, we have the resolution of symptoms, and the possibility of the patient returning to feeding and potentially being discharged; on the other hand, we have a high rate of complications and postoperative mortality especially when performed in an emergency setting.<sup>3</sup> The rate of recurrence of obstruction with the need for re-hospitalization is also not uncommon. Overall survival is short, and most patients spend the last moments of their lives in the hospital recovering from surgery.

The prognosis of MIO is poor regardless of the choice of treatment. Patients who have developed bowel obstruction during chemotherapy or who have undergone CHT within the last 6

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months have a worse prognosis because they are in disease progression during treatment. The prognosis is therefore better in patients who have been off chemotherapy for more than 6 months or who have never received this treatment. Other differences in OS were not noted according to age, sex, ASA, location of metastases (peritoneal or distant), whether the primary tumor is still in place or has been resected, and according to type of surgery (VL vs. Open). Finally, patients with NET metastases have better survival than other primary malignancies because they respond better to medical therapy.

A major dilemma for the general surgeon is to make the decision and give the indication to submit a patient with advanced neoplasia to palliative surgery in an emergency setting since operating on a patient with peritoneal carcinosis complicated by intestinal occlusion/ischemia/perforation is not a risk-free act. Surgery aims to resolve the clinical pathological condition including the symptoms, but this aim is not always achievable in patients in the terminal stage of the disease.<sup>5</sup> The patient with peritoneal carcinosis has a short life expectancy of several months or weeks and often he/she is not a candidate for surgery because of underlying malnutrition or comorbidities. Patients with terminal illnesses sometimes prefer to avoid invasive operative treatment at the end of life. But some frail patients, on the contrary, may want to relieve their clinical condition even if for a limited time, not accepting to give up hope of getting better. The two paths to choose are either genuine acute treatment or supportive care.

First, the patient must be informed of the likelihood that a true resolution of his or her symptoms will not last long and sometimes cannot be guaranteed; the risk/benefit ratio is high and the patient may have more complications than solved problems.<sup>6-10</sup>

The data collection for new studies and the establishment of a guideline on the management of emergencies in patients with peritoneal carcinosis would help to facilitate the choice of the diagnostic-therapeutic course to be followed and the discussion of the clinical case regarding the palliative intervention in line with the goal of care and the patient's preferences.

Currently, the first approach to the patient is non-operative treatment (TNO).<sup>2</sup> Mini-invasive or non-operative treatments include SNG placement, intravenous hydration or parenteral nutrition, antisecretory drugs, corticosteroids, painkillers and antiemetics, endoscopic or operative PEG, stent placement for ab extrinsic compressions of the intestinal lumen.

Surgery is generally indicated when there is failure of TNO or worsening of the clinical condition.

The most frequently performed surgical procedures are: i) ostomy (ileostomy, colostomy, jejunostomy; 18%); ii) intestinal bypass (ileo-ileal, ileo-colic, colo-colic; 21%); iii) intestinal resections (19%); iv) lysis of adhesions; v) PEG or dijunostomy; vi) non-operative exploratory laparotomy (14% for the so-called frozen abdomen, that is, extensive adhesion syndrome).

The type of surgery does not appear to have an association with the mortality rate, except for non-therapeutic laparotomy.<sup>2,8</sup>

The identification of a list of surgical options and the application of a standard QOL measurement method are necessary to ensure that the patient receives the care he or she desires and avoids invasive treatment that runs counter to the goals outlined. It is undeniable that there are prognostic factors to be taken into account before indicating surgery even if palliative, including age, performance status, nutritional status, as well as the type of neoplasm.<sup>6</sup> It is known that mortality is increased in states of malnutrition and hypoalbuminemia.

At present, there are not enough studies in the literature to define a common guideline on how to behave when faced with intestinal occlusion in peritoneal carcinosis because all the studies that have been carried out have a very high risk of bias because they are very

heterogeneous, due to the variety of neoplasms that are responsible for these conditions and their different clinical course, due to the variability of prognosis depending on age, the characteristics of the neoplasm, the patient's basic comorbidities, etc.<sup>7</sup>

Several studies have demonstrated the benefit of palliative surgery in the resolution of intestinal occlusions from advanced neoplasia or peritoneal carcinomatosis nodules mainly for the resolution of the occlusive picture with xos feeding tolerance, removal of SNG, resolution of nausea and vomiting and abdominal distension. The complication rate, recurrence rate, and the need for a second hospitalization remain very high.<sup>9</sup>

The outcomes of interest in the studies that have been performed concern are: i) overall survival; ii) postoperative mortality (at 30 days between 6-32 %) and its main causes (occlusion due to unresolved surgery (37 %), postoperative complications (16 %), sepsis (25 %), UTI or pneumonia (3.5 %), hemorrhage (3.5 %), IRA (3.5 %) ; ii) postoperative complications [specifically, wound infection rate (10%), wound dehiscence and abscesses (7.5%), paralytic ileus and gastroparesis (11%), enterocutaneous fistulae (21%), anastomotic leaks (37.5%), evisceration (37.5%), intestinal perforation (29%), dvt, tep, hemorrhage, gastrointestinal bleeding, myocardial infarction, sepsis (8.1%)] ; iii) need for hospitalization in intensive care and its duration; iv) need for mechanical ventilation and hemodynamic support in the postoperative period; v) need for further interventions and procedures; vi) pain control; vii) control of nausea and/or vomiting; viii) feeding tolerance; ix) need for SNG; x) incidence of re-operation (6-47%); xi) length of hospital stay; xii) NEED for re-hospitalisation (56%); xiii) quality of life. <sup>8</sup>

Possible positive scenarios are: i) absence of ascites, which is prognostically negative when over 3000ml; ii) absence of palpable abdominal masses; iii) return of normal postoperative bowel function. <sup>8</sup>

Average survival after surgery ranges from 109 to 191 days vs 33-78 days for TNO. A quarter of the patients die during their hospital stay; in patients with negative prognostic factors, the percentage is as high as 61%.<sup>10</sup>

It is clear from this brief report that there is a current need for guidelines for the treatment of these patients, in light of the improvements made in the treatment of advanced neoplastic diseases with the use of innovative chemotherapeutics, personalized therapies, the latest generation of monoclonal antibodies, the possibility of surgical cytoreduction and intraoperative chemotherapy such as in HIPEC and PIPAC, which give the patient months and months of life ahead. On the other hand, the likelihood of developing clinical conditions requiring emergency surgery is and will continue to grow.

## Scenarios worthy of scientific definition in position paper: what to do?

There are two different scenarios that could arise: the unknown and the known peritoneal carcinosis in an emergency case. In other words, a new discovered case of peritoneal metastasis encountered incidentally during emergency surgery for another cause or the known case of a patient with an advanced neoplastic history but a complication occurs.

A bowel occlusion or perforation could occur in a complicated colonic cancer, in a complicated gastric cancer or another abdominal malignancy in need of urgent intervention, with synchronous peritoneal carcinosis; another option could be an undiagnosed primary abdominal malignancy with peritoneal carcinomatosis in need of urgent intervention.

In particularly, detection of pseudomixoma peritonei during emergency surgery for acute appendicitis.

All these cases are worthy of scientific evaluation to define exactly which is the best therapeutic path for the patient. The purpose of the paper is to discuss the role of surgery in these various scenarios.

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