

# Brazilian Society of Surgical Oncology (BSSO) considerations on peritoneal surface malignancies management during COVID-19 pandemic

Considerações da Sociedade Brasileira de Oncologia Cirúrgica (SBCO) sobre o manejo de malignidades da superfície peritoneal durante a pandemia de COVID-19

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## ABSTRACT

The present proposal aims to support and help clinicians how to manage peritoneal surface malignancies during COVID-19 pandemic. It is based on the opinions of surgical oncologists of Brazilian Society of Surgical Oncology (BSSO) and not necessarily evidence-based instructions.

**Keywords:** Pandemics; Surgical oncology; Peritoneal neoplasms.

## RESUMO

A presente proposta tem como objetivo apoiar e ajudar os médicos a gerenciar doenças malignas da superfície peritoneal durante a pandemia de COVID-19. É baseada nas opiniões de cirurgiões oncológicos da Sociedade Brasileira de Cirurgia Oncológica (SBCO) e não necessariamente em instruções baseadas em evidências.

**Palavras-Chave:** Pandemias; Cirurgia Oncológica; Neoplasias peritoneais.

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## INTRODUCTION

The surgical treatment of peritoneal surface malignancies management consists of a highly complex procedure that may encounter limitations in the public or private health systems in the context of the pandemic. Cytoreduction surgeries, associated or not to hyperthermic intraperitoneal chemotherapy (HIPEC), are complex procedures, which imply consumption of a large amount of hospital supplies, both for the operative room and postoperative recovery. There may be a need for prolonged occupation of Intensive Care Unit (ICU) beds, and the rates of postoperative complications are not neglectable.<sup>[1]</sup> A retrospective Chinese study analyzed a series of 34 patients who contracted COVID-19 infection in the postoperative period. All cases developed pneumonia and 44% of the patients required readmission to the ICU, with a high mortality rate (20.5%), mainly involving major oncological surgeries.<sup>[2]</sup> Cytoreductive surgery with HIPEC is known for triggering an important inflammatory response and immunosuppression in the postoperative period, which makes these patients highly susceptible to develop infections and severe pulmonary conditions with an unfavorable outcome.

We recognize that the management strategies are dynamic and should be determined individually depending on the equipment and tools evaluable for oncologic treatment at each institution. Also, its application will vary according to the severity of the COVID-19 epidemic in the region. Uncontrolled extrapolation or using it not to offer the best treatment available in a non-epidemic area must be avoided.

### Oncologic management

Patients with peritoneal nodules with characteristics suspicious of malignancy should proceed to diagnosis. Imaging-guided biopsy is preferred for histological confirmation.

Laparoscopic approach is indicated for tissue samples if percutaneous needle biopsy is not feasible or when imaging scans were not able to clearly define staging and surgical resectability. It should be carefully done with surgical team adequate protection.

Testing patients for COVID-19 48 hours before the surgery is recommended.

A chest CT scan is an option for asymptomatic patients when tests for COVID-19 are not evaluable. In the case of surgery, the informed consent form must be explained and signed by the patient.

### 1. Pseudomyxoma peritonei and appendiceal neoplasm<sup>[3,4]</sup>

1.1. Low-risk for early disease progression: low-grade and high-grade mucinous appendiceal neoplasm and peritoneal cancer index (PCI)  $\leq 30$  and low-grade mucinous carcinoma and PCI  $\leq 20$ . Should be considered for postponing surgical treatment.

1.2. High-risk for early disease progression: low-grade and high-grade mucinous appendiceal neoplasm and PCI  $> 30$ , low-grade mucinous carcinoma and PCI  $> 20$ . Should be preferred to proceed with surgery if infrastructure for primary cytoreduction is available.

1.3. High-grade mucinous carcinoma and high-grade mucinous carcinoma with signet ring cells: multidisciplinary discussion concerning age, medical condition, presence of symptoms, alternative to surgery and hospital resources should be guaranteed.

1.4. There is no unequivocal role of perioperative systemic chemotherapy in patients with resectable peritoneal pseudomyxoma, but neoadjuvant chemotherapy appears to improve the prognosis of patients with signet ring cell histology and should be considered for postponing surgical treatment.

### 2. Peritoneal diffuse malignant mesothelioma<sup>[5,6]</sup>

2.1. Low-risk for early disease progression: diffuse malignant peritoneal mesothelioma and PCI  $\leq 20$ , multicystic peritoneal mesothelioma and well-differentiated papillary peritoneal mesothelioma. Should be considered for postponing surgical treatment.

2.2. High-risk for early disease progression: diffuse malignant peritoneal mesothelioma and PCI  $> 20$ . Should be preferred to proceed with surgery if infrastructure for primary cytoreduction is available.

2.3. Patients with non-epithelial diffuse malignant peritoneal mesothelioma or positive lymph nodes and patients with non-epithelial diffuse malignant peritoneal mesothelioma: multidisciplinary discussion concerning age, medical condition, presence of symptoms, alternative to surgery and hospital resources should be guaranteed.

2.4. There is no unequivocal role of perioperative systemic chemotherapy in patients with resectable diffuse malignant peritoneal mesothelioma.

### 3. Peritoneal high-grade serous carcinoma<sup>[7]</sup>

3.1. Resectable disease: should be preferred to proceed with surgery whether hospital resources, medical supplies and ICU beds are evaluable.

3.2. Borderline or unresectable disease: proceed with neoadjuvant chemotherapy after imaging-guided biopsy. Interval cytoreduction surgery with HIPEC can be offered after 3-4 cycles.

3.3. Patients that already have neoadjuvant chemotherapy after 3-4 cycles: consider going through the 6 cycles if good objective response.

### 4. Peritoneal carcinomatosis from colorectal cancer<sup>[8]</sup>

4.1. Synchronous resectable disease: Patients with diagnosis of peritoneal metastasis during sur-

gery of the primary tumor with low PCI consider going with surgery whether hospital resources, medical supplies and ICU beds are evaluable. If infrastructures for primary cytoreduction is not evaluable or the patient is not suitable for cytoreduction surgery (ECOG, age, comorbidities): proceed with neoadjuvant chemotherapy.

- 4.2. Metachronous resectable disease. Patients should be preferred to proceed with neoadjuvant chemotherapy after imaging guided biopsy (preferred), laparoscopy or cytology associated with elevation of CEA followed by cytoreduction procedure whether hospital resources, medical supplies and ICU beds are evaluable.
- 4.3. Borderline disease: patients with  $PCI > 10$  and  $\leq 20$  should be preferred to proceed with neoadjuvant chemotherapy with posterior restaging and evaluation for cytoreduction procedure.
- 4.4. Patients that already have neoadjuvant chemotherapy with satisfactory response: consider going through systemic treatment if infrastructure for cytoreduction is not evaluable.
- 4.5. Patients with high  $PCI > 20$  have poor prognosis after surgical cytoreduction and should be preferred to proceed with systemic chemotherapy.

#### 5. Peritoneal carcinomatosis from gastric cancer

- 5.1. Due to controversial issues regarding cytoreduction surgery for peritoneal carcinomatosis from gastric cancer, multidisciplinary discussion concerning age, medical condition, presence of symptoms, alternative to surgery and hospital resources should be guaranteed.

#### 6. Low-grade neuroendocrine, gastrointestinal stromal tumors and others rare tumors

- 6.1. These tumors can be considered for postponing surgical treatment after multidisciplinary discussion.

#### 7. Pressurized intraperitoneal aerosol chemotherapy (PIPAC)

Since the beginning of the use of PIPAC, safety protocols to prevent contamination of the surgical environment by chemotherapy using aerosols during laparoscopy have been rigorously standardized worldwide.<sup>[9]</sup> In Brazil, these precautions were no different.<sup>[10]</sup> This peculiarity of the technique adds a theoretical advantage in the exposure of the surgical team to COVID-19 compared to laparoscopy. However, in an atypical period such as the current scenario of COVID-19 pandemic, PIPAC, together with other oncological treatments, must be adapted to the reality of the epidemiological period. Some considerations typically related to the procedure should be pointed out.

The mandatory use of personal protective equipment (PPE) dedicated to protection against micro-particles and additional physical barriers against

aerosols used during the operation, adds additional security to the application of intraperitoneal chemotherapy by PIPAC.<sup>[11]</sup> PIPAC has already shown its potential to be used as an outpatient treatment for the application of intraperitoneal chemotherapy.<sup>[12]</sup> This outpatient peritoneal approach should be considered for the maintenance of patients undergoing palliative treatment, reducing the risk of exposure to cancer patients.

- 5.1. Patients tested negative without signs or symptoms of COVID-19 the procedure can be performed as a laparoscopic approach with additional protection against microparticles and physical barriers against aerosols.
- 5.2. Cancel the PIPAC procedures in patients suspected or infected by COVID-19.
- 5.3. A multidisciplinary team and patients should discuss all cases.
- 5.4. Consider PIPAC on an outpatient basis with strict remote monitoring in the postoperative period.

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