Article published online: 2021-06-30

Scenario of Elective Colorectal Oncology Surgeries During the COVID-19 Pandemic

Cenário das cirurgias colorretais oncológicas eletivas em meio à pandemia de COVID-19

Aline Celeghini Rosa Vicente[1] Mariana Souza Marinho[1] Poliana Graciele de Souza Silva[1] Raissa Oliveira Molina[1] Thiago da Silveira Manzione[1] Louisie Galantini Lana de Godoy[1] Fernanda Bellotti Formiga[1] Fang Chia Bin[1]

[1] Department of Coloproctology, Department of Surgery, Irmandade da Santa Casa de Misericórdia de São Paulo, São Paulo, SP, Brazil

Address for correspondence Aline Celeghini Rosa Vicente, Endereço: Rua Cayowaa, 524. Apt 185. São Paulo, SP 05018-000, Brazil (e-mail: alineceleghini@hotmail.com).

J Coloproctol 2021;41(2):111–116.

Abstract

The COVID-19 pandemic has changed the world health scenario, causing numerous problems related to the overload of services. In this scenario, the approach to oncological diseases becomes a challenge, considering the risk of progression of cancer disease and death due to delay in diagnosis and treatment. Faced with this exceptional situation, coloproctology services have been forced to change their routine to adapt to the new reality, considering risks and benefits in the conduct of these patients. Thus, the experience of the coloproctology service at the Santa Casa de São Paulo, São Paulo, state of São Paulo, Brazil, during the beginning of the COVID-19 pandemic is described, evaluating the possibility of maintaining elective oncological surgeries through selection by directed anamnesis.

Method Retrospective cohort study with prospective collection comparing colorectal surgery for cancer before and during the pandemic from December 2019 to July 2020.

Results In total, 81 patients were included. During the pandemic, 41 patients were operated on with 2 perioperative contaminations by COVID-19. Both length of stay and complications were not different between groups.

Conclusion Since there was no increase in COVID-19 morbidity and mortality in elective oncology surgeries with patients screened for guided anamnesis, it is worth considering this method for maintaining surgical procedures even in the event of a pandemic.

Keywords
- colorectal surgery
- coronavirus infections
- colon neoplasms
- rectal neoplasms
- colorectal neoplasms
- COVID-19

Resumo

A pandemia do COVID-19 modificou o cenário mundial da saúde, ocasionando inúmeros problemas relacionados à sobrecarga dos serviços. Neste contexto, a abordagem das doenças oncológicas se tornou um desafio, tendo em vista que o

received
September 17, 2020
accepted after revision
January 18, 2021

DOI https://doi.org/10.1055/s-0041-1730994.
ISSN 2237-9363.

Thieme Revinter Publicações Ltda., Rua do Matoso 170, Rio de Janeiro, RJ, CEP 20270-135, Brazil

atraso no diagnóstico e no tratamento oncológico resulta em maior risco de progressão de doença e óbito. Frente a esta situação excepcional, os serviços de coloproctologia foram obrigados a mudar a rotina, considerando riscos e benefícios na condução dos pacientes. Assim, descreve-se a experiência do serviço de coloproctologia da Santa Casa de São Paulo, São Paulo, SP, Brasil, durante o início da pandemia de COVID-19, avaliando a possibilidade de manutenção das cirurgias eletivas oncológicas através da seleção por anamnese dirigida.

Método Coorte retrospectiva com coleta prospectiva comparando cirurgias colorretais oncológicas realizadas de dezembro de 2019 a julho de 20202, comparando casos operados antes e durante a pandemia.

Resultados No total, 81 pacientes foram incluídos. Durante a pandemia, 41 pacientes foram operados, com duas contaminações perioperatórias por COVID-19. Nem o tempo de internação nem as complicações foram diferentes entre os grupos.

Conclusão Uma vez que não houve aumento da morbimortalidade por COVID-19 nas cirurgias oncológicas eletivas com pacientes triados por anamnese dirigida, vale considerar este método para a manutenção dos procedimentos cirúrgicos mesmo em vigência da pandemia.

Palavras-chave
- cirurgia colorretal
- infecções por coronavírus
- neoplasias do cólon
- neoplasias retais
- neoplasias colorretais
- COVID-19

Introduction

The COVID-19 pandemic was declared by the World Health Organization (WHO) on March 11, 2020. Since then, the world health system has faced numerous problems related to the overload of services.[1] Several societies have published guidelines advising surgery services to postpone or suspend elective operations in order to save resources for hospitalizations by COVID-19 in addition to the protection of the medical team.[2–8]

In the context of the COVID-19 pandemic, the approach to oncological diseases becomes a challenge. According to prospective studies, cancer patients are at high risk of SARS-COV-2 infection associated with a worse prognosis. When infected and submitted to elective surgery, they achieve higher rates of admission to intensive care units (ICUs) and mortality.[9–11] On the other hand, the risk of progression of oncologic disease and death due to delayed diagnosis and treatment remains.[12–14] In view of this exceptional situation, coloproctology services in several countries were forced to change their routine to adapt to the new reality, considering risks and benefits in the conduct of these patients.

In cases of indication of colectomy, there is consensus at this critical moment of the pandemic, prioritizing a laparotomic access route, with low threshold for stomas. It is also paramount to minimize risks of ICU admissions, to reduce family visits when possible, and to prioritize fast-track protocols to reduce hospitalization time.[15] On the other hand, according to the recommendations of the main societies, postponing surgical treatment in patients with early tumor and avoiding it in palliative cases seems to be the best option.[2,3,15,16]

Method

A retrospective cohort of patients who underwent elective oncological colorectal surgeries performed in a single center (Hospital Central da Irmandade da Santa Casa de Misericórdia de São Paulo, São Paulo, state of São Paulo, Brazil), located in the city of São Paulo, the epicenter of the COVID-19 pandemic in Brazil. The patients were prospectively catalogued. Data collection was performed by REDCAP with data analysis by IBM SPSS Statistics for Windows (IBM Corp., Armonk, NY, USA), with the student t-test, the chi-squared test ($p < 0.05$) and odds ratio (OR).

Patients operated from December 1, 2019 to July 1, 2020 with a diagnosis of colorectal adenocarcinoma were evaluated. These were subdivided into two groups, the first, prepandemic (control group), and the second during the pandemic. For this division, the date of March 11, 2020 was considered, as determined by the WHO. These groups could be compared in relation to previous comorbidities, Eastern Cooperative Oncology Group (ECOG) Performance Status (►**Table 1**), hospitalization time, and postoperative complications according to the Clavien Dindo classification (►**Table 2**). Surgical indications were not altered in the presence of the pandemic, that is, there was no modification of protocols, but some patients with early tumors wished to wait for surgical treatment after the pandemic.

Table 1 Eastern Cooperative Oncology Group Status Performance

Classification	Definition
0	Full activity
1	Symptoms of disease, but walks and has normal day to day activities
2	Out of bed > 50% of the time
3	In bed > 50% of the time, requires more care
4	Restricted to the bed, needs support for all activities
5	Death

Table 2 Clavien Dindo Classification for surgical complications

Classification	Definition	
I	• Any deviation from the ideal postoperative course without the need for pharmacological treatment or surgical, endoscopic, and radiological interventions • Permitted therapeutic regimens are: antiemetic drugs, antipyretics, analgesics, diuretics, electrolytes, and physiotherapy. This category also includes surgical wounds drained at the bedside	
II	• Requires pharmacological treatment with drugs other than those allowed for grade I complications • Blood transfusion and total parenteral nutrition are also included	
III	Requires surgical, endoscopic, or radiological intervention	IIIa. No general anesthesia
		IIIb. Under general anesthesia
IV	Life-threatening complication Need for ICU	IVa. Dysfunction of 1 organ
		IVb. Multiple dysfunction
V	Patient's death	

All patients were hospitalized on the eve of the procedure and were questioned about the most prevalent symptoms of COVID-19 infection (fever, anosmia, runny nose, odinofagia, cough, dyspnea), and this was a criterion for discontinuation of surgery. In addition, the patients were asked whether they had been in contact with symptomatic or diagnosed family members (►**Table 3**). Thus, all patients with colorectal adenocarcinoma who were asymptomatic for COVID-19 and agreed to undergo an elective surgical procedure in the presence of a pandemic were included. Patients with flu-like symptoms prior to the surgical procedure, regardless of the causal agent, and patients who chose to postpone the surgery were excluded, in addition to patients who had already been infected and recovered from COVID-19.

Table 3 Preoperative questionnaire aimed at identifying symptoms of COVID-19

Patient symptom	Yes	No
Fever		
Anosmia		
Agnosmia		
Runny nose		
Odynophagia		
Cough		
Dyspnea		
Relative with COVID		
Contact with relative		
Contact time		
Symptoms of relative with COVID		
Fever		
Anosmia		
Agnosmia		
Runny nose		
Odynophagia		
Cough		
Dyspnea		

Signs and symptoms of COVID-19 infection were evaluated during hospitalization and 30 days after the surgical procedure, or 15 days after hospital discharge for those with > 15 days of hospitalization. This evaluation was performed in person in the outpatient clinic and by telephone contact.

Patients who presented symptoms postoperatively or in outpatient consultations underwent computed tomography (CT) of the chest and nasopharynx swab collection (PCR-SARS-COV-2).

All procedures were performed by the laparotomic route to reduce the contagion of the medical team. The surgical team used sterile material according to usual standardization associated with n95 mask, face shield or goggles.

During the entire period evaluated, there was a reduction in the surgical activities of the team and of the entire hospital, with the cancellation of nononcologic elective surgeries and a decrease in the number of surgeries per day. During the beginning of the peak (second half of May), even elective surgeries were canceled for 2 weeks to prioritize urgent and emergency procedures aimed at reserving beds for patients with respiratory infection, especially in the ICU.

Findings

We evaluated 81 patients operated from December 1, 2020 to July 1, 2020. Out of this total, 40 patients were operated before the pandemic (control group), and 41 during the pandemic (risk group). Half of the patients was female, and the other half was male. The mean age was 60 ± 13 years old, with a median of 64 years old. The comparison of epidemiological data between the control group (March 1, 2020 to March 1, 2020) and the risk group (March 11, 2020 to July 1, 2020) is shown in ►**Table 4.**

Two patients had the procedure suspended due to positive responses in the application of the preoperative questionnaire, and 1 patient had confirmation of COVID-19 infection. One patient was excluded from the study because she had already presented infection before the surgical procedure, and one patient opted for long-course neoadjuvant treatment (chemotherapy and radiotherapy) until the end of the pandemic.

Regarding comorbidities and personal history among patients in the risk group, most of them were eutrophic

Table 4 Nominal variables – epidemiology

Nominal variables	Control group	Risk group	$p < 0.05$
	n (%)	*n* (%)	
Gender			0.8323
Male	24 (60)	22 (54)	
Female	16 (40)	19 (46)	
Age			0.0504
Average	64.2 ± 11	56.73 ± 13	
Median	66	55	
Body mass index			0.1389
Average	25.91 ± 3	25.52 ± 3	
Median	25.7	26.1	
Comorbidities			0.3283
Yes	25 (62)	22 (54)	
No	15 (38)	19 (46)	
Eastern Cooperative Oncology Group			0.9891
0	16 (40)	32 (78)	
1	18 (45)	7 (17)	
2	4 (10)	1 (2.5)	
3	1(2.5)	1 (2.5)	
4	1(2.5)	0	

Table 5 Nominal variables – surgeries, hospitalization time, complications and Clavien Dindo

Nominal variables	Control group	Risk group	$p < 0.05$
	n (%)	*n* (%)	
Surgeries			0.2592
1. Proctosigmoidectomy	22 (55)	20 (49)	
2. Abdominal-perineal amputation	6 (15)	5 (12)	
3. Right, left and segmental colectomy	7 (17.5)	8 (19.5)	
4. Complex cases	5 (12.5)	8 (19.5)	
Hospital stay			0.3451
Average	7 ± 3	8 ± 6	
Median	7	5	
Complications			0.448
Yes	10 (25)	13 (33)	
No	30 (75)	28 (67)	
Clavien Dindo			0.3003
I	7 (70)	7 (54)	
II	1 (10)	4 (30)	
IIIa	0	0	
IIIb	0	1 (8)	
IV	2 (20)	1 (8)	
V	5 (10)	3 (23.1)	

(41.5%) or overweight (41.5%), and only 25% (10 patients) were smokers. Among the patients with comorbidities (53.7%), most were hypertensive (16) using ACE Inhinitors (inhibitors of angiotensin converting enzyme) or ARB (angiotensin II receptor blockers). Only 4 patients were diabetic, all without the need for insulin use. Patients using corticosteroids (2 patients) had lung disease, either asthma or chronic obstructive pulmonary disease (COPD) (13.6% of the patients).

Two patients were contaminated with COVID-19 within 30 days postoperatively. The 1st patient (62 years old, hypertensive using ACEI) had undergone proctosigmoidectomy with protective ileostomy for low rehestium adenocarcinoma after neoadjuvant therapy. She presented symptoms on the 3rd postoperative day, evolving with prolonged ileus, anastotic fistula and ischemic colitis, being classified in relation to postoperative complications in Clavien Dindo II. She remained hospitalized for 30 days. The second patient (66 years old, diabetic on oral hypoglycemic) had undergone proctosigmoidectomy by adenocarcinoma of the middle resounding. He evolved with peritonitis estercoral by anastotic fistula in the 5th postoperative period, being reoperated for cavity washing and protective ileostomy. His diagnosis of COVID-19 was on the 15th day of the first postoperative period. His classification of Clavien Dindo was IIIb and his hospitalization time was of 10 days.

Due to the low number of patients infected with COVID-19 within 30 days postoperatively 2 (5%), it is not possible to determine whether the presence of comorbidities was a risk factor for their evolution, nor to perform a comparative analysis of the time of hospitalization and complications of with the other noncontaminated patients belonging to the risk group. The comparative evaluation between the procedures performed, as well as postoperative complications, hospitalization time, and deaths between the control group and the risk group is shown in ►**Table 5.**

Discussion

On March 11, 2020, the date the WHO declared the COVID-19 pandemic, there were 118,319 confirmed cases worldwide and 4,292 deaths. In Brazil, there were 69 cases, 46 of them in the state of São Paulo.[17] Since then, the world health system has faced numerous problems related to the overload of services.[1] It is worth mentioning that, although at the beginning of the collection the number of patients was still low in Brazil, we observed an exponential increase in contaminated people and in deaths in the country, more specifically in the southeast and in the city of São Paulo, which was the epicenter of the disease for > 8 weeks. At the end of data collection, that is, July 1, 2020, the state of São Paulo had a total of 289,935 cases and 15,030 deaths, and the city of São Paulo had 129,328 cases and 7,258 confirmed deaths. Worldwide, there were already 9,473,214 patients with 484,249 deaths.[1]

Although the main societies recommended postponing surgical treatment for cancer patients, in selected cases, as an attempt to avoid the generalized overload of health services and to avoid exposure of patients and physicians to contamination, the coloproctology service of the Santa Casa de São Paulo chose to maintain the procedures, considering that a large portion of patients referred to the service have, at the time of diagnosis, advanced tumors with potential for obstruction, bleeding and progression of the disease in a high form.

Due to the scarcity of resources available in the service, it was not possible to perform polymerase chain-reaction (PCR) tests for COVID-19 prior to hospitalization of patients, neither chest tomography as an active search for preoperative asymptomatic patients. Thus, we chose to conduct a questionnaire that included the most frequent symptoms in patients with COVID-19 and contact with people known to be infected with COVID-19.

The hospital, although it had no possibility of mass testing of patients, was divided into wards with hospitalizations of patients with suspicion and confirmed COVID-19 infection and free wards. This seems to have been another approach that may have minimized intra-hospital infections as described in other studies, showing a possible need not to exchange materials and teams in uncontaminated patients versus infected patients.

Regarding the assistant team of coloproctology, from 11 physicians, 4 were infected in the studied period: 1 assistant and 3 residents. Only one of the residents seems to have become infected during a surgical procedure; however, it was a nononcologic emergency surgery which was performed without adequate protective equipment due to their unavailability. That is, there was no contamination of the medical team during elective oncological surgeries in the studied period.

When comparing the control group and the risk group, it was observed that there were no statistically significant differences in relation to the epidemiological variables of the study (gender, age, comorbidities, and performance status), demonstrating that the samples were similar and could be compared. Only one patient chose to perform neoadjuvant treatment due to the risk of contamination, although immediate surgical procedure was indicated. The other surgical indications were not altered by the pandemic.

When analyzing the surgical procedures performed, the hospitalization time, and complications according to Clavien Dindo Classification, there were also no statistically significant differences demonstrating that these variables did not suffer interference by the pandemic in our sample.

Although 2 patients were infected with COVID-19 during the postoperative period (1 with probable preoperative contamination and 1 with probable contamination during hospitalization), we were successful in identifying the risk of infection and in suspending the procedure of a patient when performing the preoperative questionnaire (confirmed COVID-19 infection). These data may suggest that the questionnaire in hospitals without resources to submit all patients to PCR-SARS-COV-2 and/or to chest tomography in the preoperative period may be a viable alternative for the maintenance of oncologic surgical procedures, although the diagnosis of COVID-19 was not performed for all patients undergoing the surgical procedure, only for patients under suspicion.

It is not possible to rule out contamination of other asymptomatic patients; however, the complication rate evidenced in the present study is lower than the data indicated by other studies that demonstrated a mortality of up to 38% and 60% of pulmonary complications in asymptomatic patients undergoing surgery, depending on their age.[18–21] Thus, the data provided by the present study may demonstrate a possibility of maintaining oncological surgeries even during the pandemic.

Conclusion

The data collected in the present study show that, even in the epicenter of the pandemic in Brazil and without the possibility of mass testing patients preoperatively, the application of questionnaires can be an alternative to assist in the detection of individuals potentially contaminated by COVID-19, enabling the maintenance of oncological surgical procedures without offering greater risks to patients and medical staff , thus maintaining the treatment of cancer patients in the context of the Brazilian Unified Healthcare System (SUS, in the Portuguese acronym).

Conflict of Interests
The authors have no conflict of interests to declare.

References

1 Coronavirus disease (COVID-19) Weekly Epidemiological Update and Weekly Operational Update. Disponível em: https://www.who.int/emergencies/diseases/novel-coronavirus-2019/situation-reports
2 Vecchione L, Stintzing S, Pentheroudakis G, Douillard JY, Lordick F. ESMO management and treatment adapted recommendations in the COVID-19 era: colorectal cancer. ESMO Open 2020;5(Suppl 3): e000826. Doi: 10.1136/esmoopen-2020-000826
3 England N. COVID-19 rapid guideline: delivery of systemic anticancer treatments: NICE: National Institute for Health and Care Excellence. 2020: Available from: https://www.nice.org.uk/guidance/ng161/resources/COVID-19-rapidguideline-delivery-of-systemic-anticancertreatments-pdf-66141895710661
4 Amorim GLS, Assad DX, Ferrari BL, Rosa DD, Pereira BP, Clara RO, et al. Breast oncology and the COVID-19 pandemic: Recommendations from the Brazilian Society of Clinical Oncology (SBOC). Braz J Oncol. 2020;16:e-20190024
5 American College of Surgeons. COVID-19: Guidance for Triage of Non-Emergent Surgical Procedures. 2020: Available from: https://www.facs.org/covid-19/clinical-guidance/triage
6 Forrester JD, Nassar AK, Maggio PM, Hawn MT. Precautions for operating room team members during COVID-19 pandemic. J Am Coll Surg 2020;230(06):1098–1101
7 Correia MITD, Ramos RF, Bahten LCV. The surgeons and the COVID-19 pandemic. Rev Col Bras Cir 2020;47:e20202536
8 Heniford BT, Shao J, Deerenberg E, Brown Jand the MIS Task Force Statement for Laparoscopic Surgery During the COVID-19 Pandemic
9 Lei S, Jiang F, Su W, et al. Clinical characteristics and outcomes of patients undergoing surgeries during the incubation period of COVID-19 infection. EClinicalMedicine 2020;21:100331. Doi: 10.1016/j.eclinm.2020.100331

10 Paul S Myles et al, Mitigating the risks of surgery during the COVID-19 pandemic
11 Wenhua Liang, Weijie Guan, Ruchong Chen, Wei Wang, Jianfu Li, Ke Xu, Caichen Li, Qing Ai, Weixiang Lu, Hengrui Liang, Shiyue Li, Jianxing He
12 Liang W, Guan W, Chen R, et al. Cancer patients in SARS-CoV-2 infection: a nationwide analysis in China. Lancet Oncol 2020;21 (03):335–337. Doi: 10.1016/S1470-2045(20)30096-6
13 Alimoglu O, Erol CI, Kilic F, Baysal H. Cancer surgery during the Covid-19 pandemic in Turkey. Int J Surg 2020;79:54–55. Doi: 10.1016/j.ijsu.2020.05.040
14 Dinesh C Sharma, Lockdown poses new challenges for cancer care in India Lancet Oncol 2020 Published Online May 29, 2020 https://doi.org/10.1016/S1470–2045(20)30312–0
15 International expert consensus statement regarding radiotherapy treatment options for rectal cancer during the COVID 19 pandemic. "Radiotherapy & Oncology during the COVID-19 pandemic", Vol. 146, 2020
16 Dinmohamed AG, Visser O, Verhoeven RHA, et al. Fewer cancer diagnoses during the COVID-19 epidemic in the Netherlands. Lancet Oncol 2020;21(06):750–751
17 Marshall JL, Yarden RI, Weinberg BA. Colorectal cancer care in the age of coronavirus: strategies to reduce risk and maintain benefit. Colorectal Cancer 2020;0(0). Doi: 10.2217/crc-2020-0010
18 http://www.saude.sp.gov.br/resources/cve-centro-de-vigilancia-epidemiologica/areas-de-vigilancia/doencas-de-transmissao-respiratoria/coronavirus/coronavirus010720_situacao_epidemiologica.pdf
19 Mortality and pulmonary complications in patients undergoing surgery with perioperative SARS-CoV-2 infection: an international cohort study May 29, 2020 https://doi.org/10.1016/S0140-6736(20)31182-X
20 Silva, Leonardo Emilio et al. Elective surgeries in the "new normal" post-COVID-19 pandemic: to test or do not test?. Revista do Colégio Brasileiro de Cirurgiões [online]. 2020, v. 47 [Acessado 27 Maio 2021], e20202649. Disponível em: https://doi.org/10.1590/0100-6991e-20202649. Epub 12 Jun 2020
21 Shrikhande SV, Pai PS, Bhandare MS, et al;all collaborators from Department of Surgical Oncology. Outcomes of Elective Major Cancer Surgery During COVID 19 at Tata Memorial Centre: Implications for Cancer Care Policy. Ann Surg 2020;272(03): e249–e252. Doi: 10.1097/SLA.0000000000004116

