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Recommendations of the Colombian Association of Coloproctology for Management of Colorectal Cancer during the COVID-19 Pandemic

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Abstract

The economic and social repercussions and the enormous commitment required of health care systems by the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) pandemic (coronavirus disease [COVID-19]) has completely altered world reality. The disease has affected all countries on all five continents. In Colombia, from diagnosis of the very first case, measures have been taken to better prepare ourselves for this crisis.

Although it is a respiratory virus, its presence in various human tissues and organs has been documented. Despite the fact that its clinical presentation is most often in the form of mild symptoms, a significant percentage of those infected have severe manifestations that can lead to serious complications and death.

Colorectal cancer is a prevalent tumor in our population, and this pandemic forces to prepare ourselves better to treat it during this period.

The Colombian Coloproctology Association has reviewed reports in the literature and recommendations of various international associations and on our own experience with colorectal cancer during the COVID-19 pandemic. We present our recommendations for management of patients with this pathology and review management options according to disease presentation.

Keywords

SARS-CoV-2, COVID-19, Colorectal cancer, management guide.

INTRODUCTION

Since its appearance in December 2019 in the Chinese city of Wuhan, infection with severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) and development of coronavirus disease-19 (COVID-19) has been the pathology with the greatest impact on every generation, on world health systems, on the world economy and on global geopolitics.

(1, 2) On March 11, 2020, it was declared a pandemic by the World Health Organization (WHO). (3)

COVID-19 is a respiratory virus that has been shown to be highly contagious and very difficult to detect in its early stages. Its varied presentations range from asymptomatic in 80% of patients to need for intensive care and mechanical ventilation in 5% of patients. (4) Treatment of symptoms is based on ensuring adequate oxygenation and can range from minimal support with oxygen (O2) to mechanical ventilation and use of an extracorporeal oxygenation membrane (ECMO). The most severe cases of COVID-19 have also been associated with multisystemic organ failure. (5) Multiple medical management schemes using antiretrovirals, antimalarial agents, antiparasitic agents, biological drugs, convalescent plasma and other treatments have been evaluated for counteracting the virus. (2, 6) Varied results and experience will decide treatment regimens around of the world over time.

The rapid spread of the virus has forced all countries to take various measures to try to alleviate the pandemic: hand washing, physical distancing, the use of masks and other direct methods of avoiding person-to-person contagion. In addition massive quarantines, closure of borders, and isolation of risk groups have been used as large-scale epidemiological measures to prevent the uncontrolled spread of the disease and saturation of global health services. (6)

In Colombia, the measures taken early by the National Government reduced the expected numbers of cases and allowed the health system to increase its capacity, train personnel and improve the provision of personal protection equipment (PPE) thus preparing us for the most serious part of the crisis. These measures were accepted by the Colombian Association of Coloproctology so our outpatient and elective activity in operating rooms and endoscopy units was reduced.

One of the diseases seen and treated on a daily basis by proctologists and colorectal surgeons is colorectal cancer (CRC). Due to COVID-19's great global impact and effects on all health care systems, our recommendations have been established for managing CRC based on the safety of care, the availability of resources and the needs of each institution. All of our recommendations aim to maintain the best possible management of all patients.

It should be noted that there are no experts on COVID-19, so the experience gained with development of the pandemic has led to logical considerations about what has been learned and what is to be expected.

WHAT HAS HAPPENED TO DIAGNOSIS OF CRC?

Decreased endoscopic activity due to the pandemic has led to a decrease of new CRC diagnoses. (7) Most cases that have been treated are patients who had previously been diagnosed or patients who were hospitalized for symptoms of bleeding, anemia or intestinal obstruction which allowed for diagnostic studies to be done. Initial diagnoses of intestinal obstructions and bleeding currently represent higher percentages than usual among cancer patients who undergo surgery. (**Figure 1**)

Figure 1. Surgical emergency, obstructive tumor of the splenic flexure of the colon

CRC MANAGEMENT

Generalities

CRC staging is the cornerstone for defining a treatment plan. Within current priorities early and stage I tumors are not considered surgical emergencies. Depending on the specific conditions of the moment at each institution and in each city, these patients can be delayed, or the patient may be sent directly to the operating room.

Similarly, stage IV patients only undergo immediate surgery when there is obstruction or severe bleeding that cannot be managed with other methods. The prognosis of metastatic disease is given by systemic disease. Its control must be carried out in conjunction with oncology services. (8)

Stage II and III colon cancer patients should undergo surgery without delay. The decision to operate is given by the conditions of the moment at each institution, but - more than ever - it is the surgeon who must decide the moment for surgery. Phases have been established according to the pandemic, hospital occupation rates due to COVID, and the availability of PPE. If the occupation is less than 50% and there is enough PPE, cancer patients can be scheduled. If the COVID occupancy rate is higher, all surgery except for emergencies such as complete obstruction, perforation

or massive bleeding should be deferred, and other options should be reconsidered. (9)

Preparation of institutions in terms of routes and areas designated for COVID patients must be taken into account for the safety of patients with colorectal disease. Institutional protocols must guarantee safe areas in all hospitals. Although Colombian patient care networks may be limited, when there is an opportunity to direct a cancer patient to an institution without COVID patients, it may be a valuable option. (7, 9)

Management must be individualized for each patient based on recommendations and management guidelines. Group decisions and surgical meetings are essential for difficult cases and when there is doubt about various management options. The best behavior must always balance the safety of the patient and the safety of the surgical group: ethical issues or difficult decisions should be very clearly described in the medical records.

Today, more than ever, informed consent must be complete, and it must clearly describe the risk of surgery during the COVID-19 pandemic. The risks of surgery in asymptomatic patients and those with false negative COVID tests, the risks of infection in the health institution, and the risk of infection after discharge should be mentioned to the patient and their family. Discussion of all these risks e with the patient should clarify the increase in serious complications beyond the risks inherent in major colorectal surgery. This should be recorded in the clinical history. (10)

During the pandemic, we recommend that treatments be carried out by the best trained professional or group available in the environment. They should be carried out according to the best experience available in each place and be based on the availability of resources and personnel.

A surgical plan must be established and alternatives prepared for unexpected findings. All variations must be considered to guarantee necessary supplies are quickly accessible.

The normal way of scheduling patients has changed, and in many places there are no formal surgical masks. The decrease in elective surgery has made it necessary to rearrange schedules in such a way that the use of operating rooms is optimized and various specialties are mixed in the same operating room during the day. Compliance with schedules has been altered in all operating rooms due to patient transport precautions and the safety of all personnel.

Performance of surgery with all elements of personal safety for patients and for the surgical group has increased the time needed for anesthetic preparation, patient recovery and patient transfer. Surgical times have also been prolonged because glasses, breathing masks and changes in normal visibility have modified what has been done for years. This is in addition to the tiredness and fatigue generated by PPE. All of this has affected typical performance (**Figures 2, 3,** and **4**).

Figure 2. Personal protection equipment in endoscopy rooms

Figure 3. Elastomeric masks for prolonged major colorectal surgery.

Figure 4. New reality in surgical PPE

In the long term, the medical, labor, occupational and emotional repercussions of the permanent use of PPE must be determined. Undoubtedly, it takes longer than before to complete a surgical operation which is a fundamental issue for scheduling, so the flow of people in operating rooms and hospital waiting areas must continue to decrease.

This situation may generate changes in the productivity of endoscopy units and operating rooms. These considerations should be budgeted for in the coming months and could generate new ways of hiring (**Table 1**).

Table 1. General recommendations for management of CRC

Condition	Recommendation
Stage I CRC	Postpone surgery. Assess local context and if it is favorable (low ICU occupancy): surgery
Stage IV CRC	Urgent surgery only: perforation, obstruction, severe bleeding
Stages II and III CRC	Surgical management. Assess the local context
All cases of CRC	Support the conduct of the medical-surgical decision board
All patients	Information and informed consent of COVID
Health care personnel	Routine use of PPE

ICU: intensive care unit.

Endoscopic Resection

Most cases of CRC are resected. Endoscopic resection of premalignant lesions and early tumors with certain histological and morphological characteristics can be attempted, but these patients can be left on hold during suspension of elective colonoscopy in the initial phases of the pandemic. Endoscopic reevaluation should be considered and, if the initial condition continues, endoscopic resection should be attempted using the mucosectomy or submucosal endoscopic dissection, depending on the experience of the treating group. (11)

Colonoscopy produces aerosols, and COVID-19 ribonucleic acid (RNA) in stool means that the utmost precautions are required with PPE and, ideally, negative pressure endoscopy rooms. (12- 14)

If a patient is not a candidate for endoscopic resection, she or he should undergo surgery. Each institution and city will evaluate its own situation to decide when to carry out these procedures.

Local Resection

Early cancer in the mid or distal rectum may be susceptible to local resection. The criteria are the same as always: small, well-differentiated tumors with favorable histological characteristics that can be approached by the open transanal approach. Maximum protection is required with PPE due to direct exposure to the mucosa exposed with fecal matter and generation of aerosols due to the use of the electrosurgical unit. There is no clarity on the complete sealing of minimally invasive transanal surgical devices, so transanal minimally invasive surgery (TAMIS) should be a restricted during the pandemic until more information is available on its safety (**Table 2**). (9, 15)

Table 2. Recommendations for endoscopic resection and transanal resection

Condition	Recommendation
Lesions amenable to endoscopic resection before the pandemic	Reassess endoscopically
Health personnel	Use of PPE during endoscopic procedures and transanal resections
TAMIS	Not recommended

Neoadjuvant Therapy and Rectal Cancer

There is no doubt that during the pandemic, in the absence of obstruction, advanced rectal tumors benefit from the

use of neoadjuvant therapy. Induction or consolidation chemotherapy or total neoadjuvant therapy can be agreed upon in multidisciplinary meetings. Short radiation therapy schemes have been proposed in some medical centers to reduce the number of sessions and limit the risk of COVID infection due to travel or contact. (16)

Patients who finish neoadjuvant treatment and require surgery can be operated on between weeks 6 and 12, provided that the conditions of the institution allow it. The interval can be extended until week 16.

If a T2N0 tumor is suspected in the middle and lower rectum, it may be an opportunity to expand the criteria for neoadjuvant treatment to this group of patients keeping in mind the academic substrate that the best option is to preserve the organ and avoid surgery in cases of complete clinical response. (17, 18) It is possible that this experience could generate new uses of neoadjuvant for tumors of the upper rectum.

Colon Cancer

Surgery is the initial treatment of choice for colon cancer, but in cases of large lesions that compromise adjacent organs and require major multi-visceral resection, the use of neoadjuvant chemotherapy may be considered. (19)

In cases of stage II and stage III non-obstructive colon cancer, surgery should be performed depending on the availability of beds in intensive care, the percentage of COVID-19 ICU and hospital occupation, and available hospital beds.

Predictors of complications and fistulas including malnutrition, diabetes, chronic use of steroids, use of angiogenesis inhibitors, and the hemodynamic condition of the patient should be evaluated in the preoperative period. Evaluation should lead to prudent decisions regarding anastomosis. A bypass can prevent serious complications that increase morbidity and mortality. The patient must always be informed of these conditions. During the pandemic and its different phases, it is necessary to choose to reduce risks and make postoperative periods more predictable to avoid reoperations and shorten hospital stays. Probably, at this time, more than ever, clinical experience must be balanced with the available evidence. (20)

SCHEDULING SURGERY

Ideally, COVID-19 infection should always be ruled out. International guidelines call for preoperative testing of colorectal cancer patients 24 to 48 hours in advance. No symptomatic respiratory patient, with febrile syndrome or close contact with confirmed or suspected COVID infection can be scheduled. The existing guidelines leave molecular and serological tests as valid alternatives for providing safety.

All patients should fill out a questionnaire on their history of exposure to COVID within their family and/or close circle of friends and coworkers. It should include questions about travel and compliance with social isolation and provide special emphasis on the risks of asymptomatic infections.

Methods to predict the need for surgery such as the Medically-Necessary Time-Sensitive (MeNTS) scale assess and scores multiple variables to aid in determining the relevance of surgery. (21)

Until the moment of this publication, in our setting there is no universal option for preoperative tests. In some medical centers patients have been asked to strictly isolate for 14 days before surgery. When symptoms are absent, surgery is conducted with PPE and the utmost care. So far, in the initial phases of the pandemic, our results with this empirical option have been satisfactory, and there have been no COVID infections in the postoperative period although we have not yet reached the peak of contagion.

Thoracic CT scans have been useful for early detection of viral compromises of the lungs. In the absence of other evidence or certainty of isolation, it is a readily available option (**Table 3**).

Table 3. Recommendations for scheduling surgery

Condition	Recommendation
All patients	Preoperative testing for COVID if available. Chest CT is an option
Scheduling of Surgery	Do not scheduling respiratory symptoms or those with an epidemiological link
Scheduling of Surgery	Completion of COVID questionnaire, preventive isolation 14 days before surgery

Elective Surgery

The presence of viral RNA in peritoneal fluid and in feces has been confirmed, (22, 23) but its contagiousness has not been proven. This requires taking maximum surgical precautions. The contagiousness of aerosols produced during surgery in the peritoneal cavity is uncertain, and the various techniques and approaches each have their own pros and cons.

All PPE recommended by agencies such as the United States Center for Disease Control (CDC) and the American College of Surgeons that have ruled on the matter should be used during the pandemic, and in the phase that we are in. (24, 25) The use of N95 face masks, protective glasses, face shields, double gloves and impermeable gowns is mandatory for surgery and colonoscopy. Safety procedures for putting

on and taking off PPE must be strictly adhered to. (26, 38) We recommend that colonoscopy and surgery be performed in rooms with negative pressure (**Figure 5**). (27)

Open Surgery

Initially, open surgery was considered the safest route according to recommendations from China, the United States and Europe which called for the adoption of this route.

To avoid inadvertent leakage of contaminating aerosols, the use of electrical energy for dissection and hemostasis was minimized. (28) Scissors, scalpels, and ligatures were once again a reality in operating rooms. This means a big change in practice since the hemostatic benefits of the various existing alternatives undoubtedly shorten times and reduce bleeding. However, in the absence of information, even today it can be said that this technique has the least theoretical risks if the use of electrosurgical unit,

Figure 5. Personal protection equipment (38)

bipolar and ultrasonic energy is limited. Nevertheless, new generations of surgeons may have less experience with surgery without these devices. Undoubtedly their massive use can have negative consequences with regard to bleeding and the prolongation of surgical time. There is also a certainty of greater postoperative pain and longer hospital stays which are important points to take into account in times when hospital beds are badly needed.

Laparoscopic Surgery

Pneumoperitoneum with carbon dioxide (CO2) at pressures of 15 mm Hg confined in a cavity with smoke and aerosols at higher pressure than that of the environment generates a high risk of inadvertent escapes of potentially polluting aerosols. (27) This is especially so because we have in the past routinely released smoke and aerosols into our operating rooms freely.

The Colombian Association of Coloproctology's first recommendation in the initial phase of the pandemic was to avoid laparoscopic surgery in patients with COVID and those who were suspected of having the disease. We repeat that the generation of polluting aerosols in patients with COVID has not been proven, but it is logical to think about this risk and prevent it. In response to this problem, surgeons around the world are rapidly rethinking the safety of minimally invasive surgery and beginning to describe smoke extraction with various improvised methods and some newly designed for this purpose. (29, 30)

Smoke extractors had been developed earlier but this has proved to be an opportune time to rediscover and relaunch them. Only now have we become aware of the potential damage, already described but overlooked, of open or laparoscopic surgical smoke on the health of the surgeon and surgical group. It has been shown that it can be equivalent to smoking, (31) and hepatitis B virus and human papillomavirus (HPV) have been found in the smoke. (32, 33) Undoubtedly, these devices will become mandatory requirements in the operating rooms of the world after the pandemic.

It is important to remember some of the lessons learned from our 10 years of experience with laparoscopic intraperitoneal chemotherapy. Some CO_2 insufflation systems can reabsorb the gas to protect the increase in intra-abdominal pressure. Consequently, a particle filters in the patient admission circuit and fume extractor system may be recommended in the future. HEPA (high efficiency particulate air) filters which trap different sizes of virus-carrying particles must be used.

Controlling smoke and aerosols is the most important problem. Once it is solved, the great benefits of minimally invasive surgery can be seen again. For this, the benefit of having a natural barrier that confines all potentially contaminating aerosols to the peritoneal cavity can be theoretically assumed. To this end, it is recommended that the usual pneumoperitoneum pressure be lowered from 8 to 12 mm Hg. Surgeons must be strict about making small incisions and maintaining the tightness of the trocars. Reuse should be avoided. Trocars with sealing systems and inflatable balloons have increased in value as means of avoiding accidental extraction. (34) The normal surgical suction system in the room must have particle filters at the end of the collection system to prevent the escape of aerosols and microparticles into the ambient air of the operating room.

The extraction of the surgical pieces requires prior evacuation of the pneumoperitoneum at which time special care is required. Some experts recommend intracorporeal anastomoses to limit exposure of the intestinal lumen. (9) Maneuvers such as changing gauze and instruments that allow uncontrolled escape of gas from the abdominal cavity should be minimized, and less forced patient positions should be used.

Minimally invasive surgery with rapid recovery protocols produces less pain in the postoperative period and reduces hospital stays. These are a great advantages in times of pandemic. (35) The techniques of total resection of the mesorectum by the transanal route, transanal total mesorectal excision (taTME)) and minimally invasive transanal surgery (TAMIS) are not recommended until more information is available. Because of their characteristic of mixing the production of aerosols with the exposure of the lumen on a platform, it is more difficult to guarantee sealing. (9, 27)

Absorbable sutures can be used to close skin incisions and thus postpone follow-up consultation and removal of stitches. Telemedicine has become an excellent alternative to keep the patient at home longer. (35) Patients can be seen when a pathology report is available, to explain findings, and define behavior to be followed (**Table 4**). Warning signs should be reinforced to avoid late visits for fear of going to the emergency department in times of pandemic. (36)

Table 4. Recommendations for surgery

Condition	Recommendation
Laparoscopic surgery	Decreased pressure of the pneumoperitoneum. Gentle CO_2 extraction
Surgical technique	Continue with technique most familiar to surgical group
Smoke evacuation	Evaluate obtaining smoke evacuators or creating your own (available)
TaTME and TAMIS	Not recommended for now

RESTARTING AND NORMALIZING ACTIVITIES DURING THE PANDEMIC

Each place has its own reality. China has proposed that 80% of the installed capacity operate. In Europe health care services have reopened and recommendations have been issued on how to safely return to healthcare activities. (9). All of them involve questionnaires about medical history, current illness, ruling out fever, and specific tests for COVID. In our environment, the measures taken by the National Government have had the expected results of flattening the contagion curve and have given the health care system time to expand installed capacity, acquire PPE and train staff on the best way to face this crisis. However, a rebound in the disease is still expected, so talking about resuming activities during the peak can be somewhat controversial. Possibly one should talk about learning to work during the pandemic. That said, the orderly reopening of outpatient services and some elective surgery is expected, so that patient waiting lists will shorten without compromising essential services of institutions, and always with active evaluation of hospital occupation and COVID infections in each city and institution.

Questioning about risk factors, associated symptoms, and fever has become mandatory and fundamental to patient care. The usefulness of testing asymptomatic patients is not 100% certain, but its performance improves the option of ruling out infection and gives peace of mind to the patient and the treating group when they undertake surgery.

The economic impact on institutions and physicians has been enormous. In our environment, the duration of the disease may be prolonged, so that patient care during the different phases of the pandemic may lead to a new type of coloproctology practice with partial renewal of consultation, endoscopic activity and elective surgery while maintaining maximum care and reorganizing schedules in such a way as to continue working with the highest quality and total safety.

All these activities imply increased time and decreased productivity that surely must be evaluated with the different actors in the health care system compensated accordingly. A review of direct and indirect costs including recognition of increased time required to provide professional services that will be affected by this new world order is expected.

The experience of other continents and countries has allowed us to see all scenarios, take precautions, and pause as required to adapt to our new reality. The possibility of a second wave of the pandemic has been recognized, so our practice must be prepared for variability of the disease until we have global solutions with vaccines and effective treatments.

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