

# Management of non traumatic surgical emergencies during the COVID-19 pandemia

## *Conduta nas urgências e emergências cirúrgicas não traumáticas durante a pandemia COVID-19*

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### ABSTRACT

In December 2019, in Wuhan, China, the first cases of what would be known as COVID-19, a disease caused by an RNA virus called SARS-CoV-2, were described. Its spread was rapid and wide, leading the World Health Organization to declare a pandemic in March 2020. The disease has distinct clinical presentations, from asymptomatic to critical cases, with high lethality. Parallel to this, patients with non-traumatic surgical emergencies, such as acute appendicitis and cholecystitis, continue to be treated at the emergency services. In this regard, there were several doubts on how to approach these cases, among them: how to quickly identify the patient with COVID-19, what is the impact of the abdominal surgical disease and its treatment on the evolution of patients with COVID-19, in addition to the discussion about the role of the non-operative treatment for abdominal disease under these circumstances. In this review, we discuss these problems based on the available evidence.

**Keywords:** Emergencies. Pandemics. Coronavirus Infections. General Surgery.

### INTRODUCTION

COVID-19 is a disease caused by the SARS-CoV-2 virus, an RNA virus. It was initially described in Wuhan, China, in December 2019. In January 2020, the World Health Organization understood the situation as an “international concern” and, on 3/11/2020, as a pandemic. At the time of writing this text (May 15, 2020) there are around 4.5 million cases in the world, and approximately 300,000 deaths. The first case in Brazil was documented on 2/25/2020, in the City of São Paulo. Although there is a characteristic curve for the evolution of the disease, it has developed differently in the various the states of Brazil, suggesting that each area may be at a different moment in its evolution<sup>1,2</sup>.

It is also known that non-traumatic abdominal surgical emergencies (NTSE) are very common and are likely to continue to appear in the emergency services during the COVID-19 pandemic. Various diseases can occur under this situation, such as acute appendicitis, acute calculous cholecystitis, acute diverticulitis, acute pancreatitis, perforated ulcer, intestinal obstruction,

incarcerated hernias, intestinal ischemia and even acute hemorrhagic abdomen. They are acute diseases with significant potential for complications and deaths, in a short period of time. There is a need for quick decision making so that the best results are achieved.

In a pandemic period, the treatment of these patients deserves a broader discussion, as there are not well established points yet about the diagnosis and treatment of this disease.

There are still open questions under these situations:

- How to quickly and correctly establish the diagnosis of COVID-19?
- Can the presence of an infectious abdominal disease influence the evolution of a COVID-19 patient? And vice versa?
- What is the impact of the operative treatment, including the need for general anesthesia and mechanical ventilation, on the evolution of COVID-19?
- Do the protocols for non-operative treatment (NOT) of intra-abdominal infections have the same result in COVID-19 patients?

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- What is the risk of contamination of the team when performing a surgical procedure?

Regardless of these questions, there are clear priorities, such as to:

- Offer the safest and least invasive treatment to the patient.
- Prevent contamination of the medical and assistance team.
- Preserve the use of Personal Protective Equipment (PPE).
- Reduce the use hospital and ICU beds.
- Minimize viral transmission as much as possible.

These priorities must not compete with each other. There has to be a balance, offering the best treatment to the patient, in association with the lowest risk of contamination for the team and the greatest possible preservation of resources.

In response to these circumstances, several internationally renowned societies have published their recommendations on how to manage surgical patients under this pandemic, including: Brazilian College of Surgeons - CBC, Brazilian Trauma Society - SBAIT, American College of Surgeons - ACS, SAGES, Royal College of Surgeons of Edinburgh - RCSEd, World Society of Emergency Surgery - WSES, European Society for Trauma & Emergency Surgery - ESTES, among others<sup>1,3-10</sup>.

These respected societies developed recommendations for the care of the surgical team, and the prioritizing of operations, as well as the management of traumatic and non-traumatic emergency operations. We do recommend reading them, as they are all of great validity, and guide the decision making process in these difficult times.

However, due to the need for quick disclosure of information about COVID-19, many studies in important journals are being released without the usual review. Although there are very clear suggestions, their scientific basis is not unquestionable, which weakens recommendations. In this regard, we understand that bedside decisions should be made individually, taking into account the many involved variables, especially local working conditions.

The purpose of this text is to discuss some of

the aspects that should be taken into consideration by surgeons when they need to make a decision regarding non-traumatic surgical emergencies during the COVID-19 pandemic. More than answers, our idea is to provide the tools for each surgeon, according to his/her reality, to make the best decision.

## 1. Does the patient have COVID-19? What form of presentation?

It is important to note that COVID-19 has a varied clinical presentation, ranging from asymptomatic patients to lethal conditions, regardless of the best form of treatment instituted<sup>11-13</sup>. Authors that followed the evolution of asymptomatic carriers of the virus found that approximately 20% of the cases evolved to symptomatic forms<sup>12</sup>. The most common presentation is infection of the upper airways, but about 25% of patients may have abdominal symptoms such as diarrhea and pain<sup>11</sup>.

For this reason, it is recommended that all patients with abdominal surgical emergencies be evaluated for the identification of COVID-19, even in asymptomatic cases. This is justified because there is a pandemic and, if the patient is positive or suspect, there will be specific repercussions on the treatment and transmission precautions. In suspicious and positive cases, isolation measures are suggested, involving a specialized team (internal medicine or infectious diseases), discussion on the use of specific medications, assessment and support of organic disfunctions and epidemiological guidelines for family members. Another important point is that the presence of COVID-19 can influence the treatment of the abdominal disease in some cases, as it will be seen below.

The first way to assess the presence of COVID-19 is through the clinical history. The presence of fever, cough, coryza, myalgia is suggestive of the disease, especially if the patient has been in an endemic area or has had contact with a patient with the confirmed disease. Acute anosmia, when present, is a strong indication of the disease. There are specific scores that can help define the risk. However, because there are other viruses that present a similar clinical condition, the ideal is to have some test to confirm the disease. Specifically, in patients presenting with abdominal

surgical emergencies, societies recommend that patients be tested for COVID-19, even if they are asymptomatic.

The test that has been most frequently used for the diagnosis of COVID-19 is the identification of viral RNA in nasopharyngeal secretions, using the RT-PCR technique. However, there is great concern about related false-negative results. There are many variables that influence its positivity: time between onset of symptoms and collection, the method of the collection, as well as the organs affected by the disease at the time of collection. Zhao et al. in 2020, reported that the sensitivity of RT-PCR ranged from 67% in the collection within one to seven days of the onset of the condition, to 45% only, when the sample was collected after two weeks<sup>14</sup>. Guo et al., in 2020, demonstrated that more than 90% of patients with a compatible clinical history and chest computed tomography images suggestive of COVID-19, but with negative RT-PCR, presented positive IgM for the virus<sup>15</sup>. On the other hand, rapid tests to identify IgG and IgM have low sensitivity in the first week of the disease<sup>14</sup>. That is, up to now, methods for diagnosing COVID-19 may fail in a significant number of patients. In addition, the results of these tests can take a long time to be ready. Many patients with abdominal surgical emergencies need quick definitions, as the delay in treatment can worsen the local and systemic condition. This makes it difficult to use laboratory tests in clinical practice.

There is the possibility of using computed tomography (CT) of the chest (performed in conjunction with CT of the abdomen and pelvis) as a way to quickly identify suspected cases<sup>16,17</sup>. The presence of bilateral peripheral ground-glass images is very suggestive of COVID-19. In the study by Zhiliang et al., in 2020, 17 (70%) of the 24 positive but asymptomatic RT-RNA patients had changes in chest CT. Of these, 12 (50% of the total) had characteristic findings of COVID-19. It is important to note that the preoperative chest CT is suggested by some societies for all patients with abdominal surgical emergencies, even for those without respiratory symptoms<sup>4,8</sup>.

In a study involving 1014 patients, Ai et al., in 2020, reported that 97% of the patients with COVID-19 positive RT-PCR also had positive chest CT<sup>16</sup>. Of the 308 who had negative RT-PCR, more than 80% were

considered probable or highly probable for COVID-19. Of great importance, it was also seen that more than 90% of patients who had initially negative RT-PCR, and who were positive during hospitalization, had a positive chest CT early at admission.

Negative chest CT does not rule out the presence of COVID-19. In these cases, there is no way to predict the patient's evolution. In the situation under discussion, the focus should be a positive CT, as, in this context, the case must be considered suspicious and treated as such. In the "COVID-19 Prevention and Treatment Manual", edited by Liang in 2020, it is understood that the patient with a clinical history and CT suggestive of COVID-19 should be considered and treated as positive, even if the RT-PCR is negative<sup>13</sup>.

Once there is a definitive or suspected diagnosis of COVID-19, it is necessary to stratify its severity<sup>13</sup>. It is different to discuss operative treatment in a patient with images suggestive of COVID-19 on chest CT, but without significant hypoxia, and another with respiratory failure. The severity of COVID-19 is an important variable to be considered to decide the treatment to be instituted for concomitant abdominal disease.

- Mild cases: mild clinical symptoms and no signs of pneumonia on imaging studies.
- Moderate cases: fever and respiratory symptoms, associated with changes in imaging tests.
- Severe cases: Adults who meet any of the criteria: respiratory rate  $\geq 30$ rpm, oxygen saturation  $< 94\%$ ,  $PaO_2/FIO_2 < 300$ mmHg and progression of  $> 50\%$  of lung images.
- Critical cases: respiratory failure requiring mechanical ventilation, shock or other organ failure in an intensive care unit. These cases can be divided into three phases:
  - Initial phase: oxygenation index ( $PaO_2/FIO_2$ ) between 100 and 150mmHg, compliance  $> 30$  mL/cmH<sub>2</sub>O, without other organ failures other than respiratory failure.
  - Intermediate phase: oxygenation index ( $PaO_2/FIO_2$ ) between 60 and 100mmHg, compliance  $> 15$  mL/cmH<sub>2</sub>O, with moderate associated organ failure.
  - Late phase: oxygenation index ( $PaO_2/FIO_2$ )  $< 60$ mmHg, compliance  $< 15$  mL/cmH<sub>2</sub>O, severe organ failure in addition to respiratory failure, use of ECMO.

## 2. Is there a clear indication for operative treatment?

It is important to highlight that there are cases of abdominal diseases that need to be treated surgically, and if not treated properly, they can incur serious complications, and cause death. Under these situations, the priority should prioritize the surgical abdominal disease, regardless of the presence or severity of COVID-19. There is consensus that operative treatment is necessary in cases of free pneumoperitoneum, diffuse peritonitis, sepsis of abdominal origin (SEPSIS-3), intestinal ischemia/necrosis, bowel obstruction without response to initial clinical treatment, or even hemoperitoneum with hemodynamic instability, among others. In these cases, the surgical indication is clear and independent of the concomitant presence of COVID-19.

There will be situations of critical patients, with extreme clinical derangements, severe hypoxia, under full anticoagulation therapy and with organic dysfunctions, for whom the operative risk is considerably high. In these cases, it should be considered an interdisciplinary discussion between the involved teams and family members, making the best decision for the patient, whether it be the attempt of operative treatment even with high risk of death, maintenance of clinical treatment or palliation, as long as everyone agrees.

## 3. When to indicate the non-operative treatment?

In cases where there is no clear indication of operative treatment such as those described above, it is appropriate to discuss non-operative treatment for abdominal urgency, in a time of pandemic.

A few studies that report the evolution of patients with COVID-19 who underwent surgery justify such decision. To date, the study by Lei et al., published in 2020, serves as a reference<sup>18</sup>. They studied 34 patients who developed clinical symptoms of COVID-19 in the immediate postoperative period. These authors considered that these patients were operated during the incubation period. There was a 20% mortality

rate, although restricted to patients undergoing more complex operations. However, 44% of patients required admission to the ICU, and 11 patients (32.4%) developed Acute Respiratory Distress Syndrome - ARDS. Other reports of postoperative complications reinforce the fact that patients with COVID-19, even in simple forms, are not the best candidates for operative treatment. Aminiam et al. in 2020, reported 4 cases of serious complications in the postoperative period of elective operations, which were attributed to COVID-19. Three out of these 4 patients died<sup>19</sup>.

Adding to this the fact, there is the potential risk of contamination of the team (anesthetic, surgical and circulating)<sup>1,4-10</sup>. This contamination can occur due to the most common forms such as contact and droplets, but the main concern is at the time of tracheal intubation and during the operation, by the production of aerosols. Viral RNA was identified in the blood of about 10% of the tested patients<sup>20</sup>. Chen et al., in 2020, identified viral RNA in the feces of 66% of patients with COVID-19, with only 8 (20%) having gastrointestinal symptoms<sup>21</sup>. Viral RNA was recently identified in the peritoneal fluid of a patient operated for intestinal obstruction<sup>22</sup>. This risk of contamination is believed to exist even in the asymptomatic carriers<sup>12</sup>.

In this context, if the operation can be postponed "without significantly increasing the risk to the patient", it seems to be the best option. There are several proposals for non-operative treatment, or through minimally invasive procedures, for non-traumatic abdominal emergencies that have greater interest under these conditions. There are several studies of non-operative treatment for acute calculous cholecystitis, acute appendicitis (with periappendicular abscess or even uncomplicated), acute diverticulitis with abscesses, uncomplicated intestinal obstruction and even perforated peptic ulcers (with local disease - without diffuse peritonitis), among others. The premise of this form of treatment is that the patient has no diffuse peritonitis, and with adequate control of the abdominal infectious condition.

However, most of these studies do not assume that there is a concomitant infectious disease, which is the situation under this pandemic, with patients using several medications, anti-thermals, anticoagulants,

supplemental oxygen (and even sedation for mechanical ventilation). What is the condition of the abdominal physical examination? Will it be possible to monitor the evolution of the abdominal disease by physical examination? Will it be possible to follow the evolution with complementary tests? There will certainly be cases for whom this is not possible, breaking a basic rule of non-operative treatment. Furthermore, it will be difficult to know whether the clinical worsening is secondary to the abdominal condition or only due to the COVID-19.

All general surgeons, working in emergency services, know that there is a potential risk of complications and death in patients with non-traumatic abdominal emergencies. It is not uncommon to treat cases of patients with acute appendicitis that were not promptly diagnosed, who were treated initially with antibiotics as urinary tract infection, acute gastroenteritis or even pelvic inflammatory disease. These patients may have high morbidity and progress with abscesses or diffuse peritonitis, making their treatment more difficult and prolonging their recovery. If there were complications or even death from the surgical abdominal disease in non-operatively initially treated patients, what would be the thoughts of family members and lawyers?

Another important point: the evolution of COVID-19 in these cases is not known. Some factors of poor prognosis, such as age, chronic obstructive pulmonary disease - COPD, cardiovascular diseases,

diabetes mellitus and obesity<sup>1,13</sup> are known, there is no “crystal ball” to predict the evolution of a given patient. It may be that it progresses to respiratory failure, making the performance of operative procedures difficult or even impracticable, losing the timing of the operative treatment. That is, non-operative treatment can have serious consequences, as well.

Operative treatment is not impossible to be done in positive COVID-19 patients. In 2020, Gao et al. reported four suspected patients with COVID-19 who underwent exploratory laparotomy for acute abdomen. All had a clinical and CT diagnosis<sup>23</sup>. These cases went well, demonstrating that it is also possible to have good results in COVID-19 patients undergoing surgical treatment. Cai et al., in 2020, reported eight cases of positive COVID-19 patients undergoing operative treatment, with one death in this group<sup>24</sup>.

Something to think about...If you had a “crystal ball” and could predict that the patient with an acute abdominal condition without respiratory symptoms would later develop a severe form of COVID-19 in a few days...it would not be better to operate early, in a moment of greater stability? Unfortunately, there are no data to have a safe answer.

Therefore, although non-operative treatment seems like an option, it is not so simple to predict its evolution. Table 1 shows the weighting of therapeutic options in this pandemic moment.

**Table 1.** Weighting of therapeutic options. Benefits and disadvantages of operative and non-operative treatment of non traumatic surgical emergencies during the COVID-19 pandemia.

Operative treatment	Non-operative treatment
Benefits	Benefits
<ul style="list-style-type: none"> <li>- Direct approach to surgical disease, maintaining the proposal considered as the gold standard for the treatment of diseases such as acute uncomplicated appendicitis and acute calculous cholecystitis.</li> <li>- Greater chance of resolving surgical disease, with consequent shorter hospital stay and complications.</li> <li>- Less use of resources in general, complementary tests and antibiotics to control treatment.</li> </ul>	<ul style="list-style-type: none"> <li>- Less chance of contamination of the anesthesiology and surgery team.</li> <li>- Possible protection of the evolution of COVID-19 to more serious forms.</li> <li>- Possibility of outpatient treatment in the simplest cases.</li> <li>- Savings on PPE, in cases where outpatient treatment is possible, considering that there will be no complications.</li> </ul>

To be continued...

## Continuation

Disadvantages	Disadvantages
<ul style="list-style-type: none"> <li>- Unpredictability of the evolution of COVID-19 in these cases.</li> <li>- Possibly there is a greater chance of respiratory complications in patients undergoing surgical treatment.</li> <li>- Greater chance of contamination by the anesthesiology team during orotracheal intubation.</li> <li>- Greater chance of contamination of the surgical team in the operative act.</li> <li>- Risk of surgical complications and need for ICU, with consequent longer hospital stay.</li> </ul>	<ul style="list-style-type: none"> <li>- It is not the gold standard for some diseases such as acute uncomplicated appendicitis and acute calculous cholecystitis.</li> <li>- Chance of local and systemic complications of these diseases, making surgical resolution at a later time more complicated.</li> <li>- Real chance of death from sepsis of abdominal focus if the situation gets out of control.</li> <li>- Loss of the "timing" of treatment: if the patient complicates with COVID-19, the operative treatment of abdominal disease may be rendered unfeasible.</li> <li>- Need for second-stage operative treatment (e.g. cholecystolithiasis).</li> <li>- Longer time of antibiotics.</li> </ul>

With these possibilities in mind, the results on non-operative management in some of the most frequent diseases will be evaluated.

#### 4. Non-operative management (NOM) protocols

It is of utmost importance to once again highlight that the literature available proposals for non-operative treatment should not be applied without criteria in COVID-19 patients, as they have been studied in other contexts. However, considering a pandemic situation, the information provided by previous studies is important to evaluate the expectation about the results.

##### a. Acute appendicitis

Nonoperative treatment for cases of acute appendicitis can be analyzed in two different groups of patients: those with periapendicular abscesses and those with uncomplicated acute appendicitis.

The diagnosis of periapendicular abscess should be considered when the patient has a longer history, usually more than seven days, and has localized pain and peritonitis. An inflammatory mass is often palpated

in the region. In these cases, treatment with antibiotics and eventual percutaneous drainage of collections is recommended, according to the consensus of the World Society of Emergency Surgery (WSES) of 2011, 2013 and 2017<sup>23</sup>. In 2007, Andersson and Petzold conducted a review involving 61 studies. They reported failure of non operative management in only 7% of patients with periapendicular abscesses. Percutaneous drainage was necessary in 20% of cases<sup>26</sup>. Simillis et al., in 2010, reviewed 17 studies, involving 1,572 patients with acute appendicitis complicated by abscess or phlegmon, concluding that conservative treatment reduced complications in the evolution<sup>27</sup>. Thus, in a pandemic, the option for NOM seems to be a good option, if the patient falls under the formal indications. The flaws in this form of treatment need to be quickly identified, so that the treatment could be reviewed.

The proposal for NOM in the context of uncomplicated appendicitis is based on prospective and randomized studies comparing appendectomy versus clinical treatment with only antibiotics<sup>28</sup>. The objective would be to give the option of non-operative treatment to a group of patients who would undergo appendectomy. There are several prospective studies, with similar results. In 2016, Sallinen et al. demonstrated in a meta-analysis

that NOM was successful in approximately 75% of cases, while appendectomy was successful in more than 95%<sup>29</sup>. Since the vast majority of cases are resolved with appendectomy, it is our opinion that this is the best form of treatment.

However, in times of a pandemic, antibiotic only treatment can be considered, as it is known that 75% of the cases are successful, even without surgery. In the Guidelines of the World Society of Emergency Surgery (WSES) of 2020, non-operative treatment for uncomplicated acute appendicitis is accepted in selected patients, as long as they are aware of and agree with the risks of this option<sup>28</sup>. The recommendation of the Intercollegiate surgical societies, jointly published by the Royal College of Surgeons of Edinburgh, comments on the possibility of open appendectomy, under regional anesthesia, as an option for non-operative management<sup>8</sup>. As both possibilities are accepted, we believe that the decision will be up to the surgeon and the patient, after evaluating the risks and benefits of each case. It should be considered though, that appendectomy may, in fact, decrease the use of antibiotics and admission time in a group of patients.

#### *b. Acute calculous cholecystitis*

The 2018 Tokyo consensus (updating the previous ones) considers non-operative treatment only in cases of significant clinical impairment, such as ASA 3 patients or those with a Charlson scale > 5 (or > 3 in those with acute Tokyo cholecystitis grade 3). In other words, most patients with acute calculous cholecystitis, in normal times, undergo urgent surgical treatment<sup>30</sup>.

In pandemic, it is worth reviewing NOM as an option to these patients. The results of the nonoperative treatment of acute uncomplicated cholecystitis are good. More and 90% of patients recover from the acute condition, according to studies by McGillicuddy et al., in 2012, and Janssen et al., in 2019<sup>31,32</sup>. Percutaneous transhepatic cholecystostomy can be used if the infection does not improve within the first 48 hours with antibiotic treatment. Most patients will need cholecystectomy to treat cholecystitis at a second moment, however, as the goal is to postpone the operation, it seems to be a good option during the pandemic. Janssen et al., in

2019, analyzed the evolution of 33 patients with acute cholecystitis treated medically. Of these, 12 required percutaneous cholecystostomy and only 2 (8%) required emergency cholecystectomy<sup>32</sup>.

It is worth mentioning the cases for whom NOM has a greater chance of failure and, possibly, should not be considered, as in patients with diabetes mellitus and complicated forms of acute cholecystitis (gallbladder wall necrosis, including acute cholecystitis emphysematous, blocked perforation or even coleperitoneum).

## 5. Epidemic momentum

Another important point that must be taken into account when deciding how to treat a patient with non-traumatic abdominal surgical urgency is the current moment of the pandemic, which includes the availability of resources. Ross et al., in 2020, divided the situation into four phases<sup>33</sup>:

**a. Alert:** when there are no cases of COVID-19 in the hospital. This is the moment of preparation, where there are few changes in the management of routines. This is the time for the structure to be set up for what is to come.

**b. Level 2:** starts with the first case of COVID-19 and continues until there is close to 100% of hospital capacity and 90% of occupied ICU beds. In this phase, there are progressive changes in the scales of surgical coverage, in order to preserve the teams. There is also a progressive decrease in elective operations. The treatment of surgical emergencies remains close to usual. The authors propose that surgeons be directed to form teams to cover emergencies and ICUs.

**c. Level 1:** when the hospital is above 100% occupancy and, the ICUs, above 90%. At this time, there are no longer any conditions to perform elective operations and care should be directed to COVID-19 patients. The effort must also involve the creation of beds, especially in the ICU. Non-operative treatment will be indicated for surgical emergencies, if possible.

**d. Condition Zero:** hospital with more than 125% occupancy and, ICUs, above 100%. There is a lack of PPE and the operating rooms can be used as ICU beds. Surgical shifts may be coordinated by non-specialist surgeons. At this time, only emergency operations should

be considered, as well as the transfer of non-COVID-19 patients to other centers. If transfer is not possible, non-operative treatment becomes the best option in cases where there is a possibility.

## 6. The decision...

Several points should be considered, which are summarized in table 2.

**Table 2.** *Factores in favor of operative and NON-operative treatment in patients with SARS-Cov-2 infection.*

Factors in favor of operative treatment	Factors in favor of NON-operative treatment
Clear indication of operative treatment	No clear indication of operative treatment
Negative chest CT or minimal involvement	Frankly positive chest CT
Mild / moderate COVID-19	Severe / critical COVID-19
IgG positive	IgM / IgA positive
Acute uncomplicated appendicitis	Appendicular abscess
Complicated acute cholecystitis	Uncomplicated acute cholecystitis
NOM failure in Diverticulitis H I and II	Diverticulitis Hinchey I and II
Initial phase of the pandemic	Late stage of the pandemic
Available PPE	Lack of PPE

## 7. What if it is defined to operate?

There are several recommendations that need to be addressed, in order to preserve the safety of the teams and the patient. European Society for Trauma & Emergency Surgery (ESTES) recommendations, published by Coimbra et al., in 2020, seem to widely cover the theme<sup>10</sup>. There are several tables that number the details throughout the treatment process, and we recommend reading them. Other important societies have offered their recommendations, and they deserve attention.

The technical note GVIMS / GGTES / ANVISA No. 06/2020: GUIDELINES FOR THE PREVENTION AND CONTROL OF INFECTIONS BY THE NEW CORONAVIRUS (SARS-CoV-2) IN SURGICAL PROCEDURES, by Anvisa, prepared and reviewed by several Brazilian surgical societies including the Brazilian College of Surgeons and Brazilian Trauma Society (SBAIT) brings the recommendations under the view of the Brazilian surgeons<sup>34</sup>. When the patient is symptomatic, suspicious or confirmed, the surgical team is recommended to wear a cap, N95 / PFF2 mask or equivalent, face shield, waterproof surgical gown and sterilized gloves. When the patient is asymptomatic, and the procedures are

WITHOUT RISK of aerosolization, the recommendation is that the surgical team wear a cap, surgical mask, face shield or glasses, surgical gown and sterilized gloves. When there is a risk of aerosolization, the recommendation is the same as the suspected or confirmed patient, as well as in emergency situations, when it is not possible to adequately screen for the symptoms. This recommendation has the necessary minimum precaution, is dated April 29, 2020, and should be modified according to the need and the updated information about the disease.

## FINAL CONSIDERATIONS

Finally, it is worth mentioning that the number of publications in the last few months has been impressive. Many studies may be criticized, but the fact is that a lot has been reported about COVID-19. Articles appear daily on the topic and new challenges are believed to emerge in the next months. We believe that this text is yet another invitation for reflection. Right now, although we don't have the best information, we will need to make decisions. Authors hope that the ideas presented here can help colleagues at this delicate moment.



## R E S U M O

Em dezembro de 2019, em Wuhan na China, foram descritos os primeiros casos do que seria conhecida como a COVID-19, doença causado por um RNA vírus denominado SARS-CoV-2. A disseminação foi rápida e ampla, levando a Organização Mundial de Saúde a decretar pandemia em março de 2020. A doença tem apresentação clínica variada, desde portadores assintomáticos até casos críticos, com alta letalidade. Paralelamente a isto, pacientes com urgências cirúrgicas não traumáticas, como apendicites agudas e colecistites agudas, continuam a ser atendidos nos serviços de emergências. Neste contexto, surgiram várias dúvidas sobre a conduta nestes casos, entre essas: como identificar rapidamente o paciente com COVID-19, qual o impacto da doença cirúrgica abdominal e o tratamento na evolução dos pacientes com COVID-19, além da discussão sobre o emprego de tratamento não operatório para a doença abdominal nestas circunstâncias. Nesta revisão, trazemos a discussão destes problemas sob a luz das evidências disponíveis.

**Palavras chave:** Emergências. Pandemias. Infecções por Coronavírus. Cirurgia Geral.

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