



## Lessons Learned from Anesthesiology Practice During the COVID-19 Pandemic

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### Abstract

**Aims and objectives:** Aim of this article was defining the problems related to anesthesia practice during Covid-19 pandemic and understanding the importance of this new experience. For these purposes we reviewed our previously published articles and existing literature which were helpful for comprehensive analysis of anesthesia related problems during Covid-19 pandemic.

The COVID-19 pandemic has posed unprecedented challenges to the field of anesthesiology, impacting patient care, team collaboration, safety protocols, and healthcare provider well-being. This article, explores the lessons learned from navigating the complexities of anesthesia practice during the pandemic. Anesthesiologists have the critical role in caring for severely ill patients, emphasizing the necessity of stringent infection control measures and adaptive patient management protocols. Implementation of safety measures, including preoperative testing, personal protective measures and adapting anesthesia techniques to minimize the risk of viral transmission was critical. Pandemic impacted on surgical scheduling, emphasizing the need for careful risk assessment, delayed surgeries, and tracking postoperative outcomes in COVID-19 survivors. Uncommon complications and presentations, such as hematoma of rectus abdominis muscle, underscore the diagnostic and treatment challenges faced by anesthesiologists. Despite the adaptability and resilience demonstrated by anesthesiologists, the pandemic has taken a toll on their well-being, with a significant increase in burnout rates observed. Most authors underscore the importance of team collaboration, ongoing training, ethical decision-making, mental health support, global collaboration, and technology integration in navigating the challenges posed by the pandemic. In conclusion, the COVID-19 pandemic has not only tested the resilience of the anesthesiology profession but has also provided valuable insights into adapting practices, enhancing patient safety, and promoting provider well-being. These lessons are crucial for building a more resilient and responsive healthcare system in the face of future health crises.

**Keywords:** COVID-19 Pandemic; Anesthesiology; Risk; Complications; Critical Role; Lessons

### Introduction

COVID-19 pandemic was great challenge for all aspects of human life and especially for medicine. After passing of 4 years from its beginning we are still looking and feeling the consequences of this pandemic, which is related to nearly 7 million deaths worldwide [30]. This novel infectious disease was uncertain and unknown four years ago. Therefore, initially was not clear the best preventive

measures and treatment and many initial recommendations were changed and refused. Since the beginning of pandemic hospitals routine work stressfully affected because the great number of COVID-19 patients were needed in hospitalization, intensive care, emergency and elective surgeries. Anesthesiologist as a specialist responsible for patient preoperative consultation, preparation for surgery, perioperative care, pain treatment and intensive care was

in the center of hospitalized COVID-19 patients care. In this article we will discuss how this situation influenced anesthesia practice.

## Review

During any pandemic situation, potentially all people can be infected. Therefore, since the beginning of COVID-19 pandemic, there was necessity of testing each hospitalized patient for SARS Cov-2 infection [10]. First clinical findings showing the increased risk of postoperative pulmonary complications and death in COVID-19 patients published after few weeks and months of COVID-19 pandemic beginning. According to them ICU mortality in COVID-19 patients increased dramatically between up to 51-88% [8,11,28].

Anesthesiologists had a critical role in intensive care settings. They have been at the forefront of managing severely ill COVID-19 patients, often playing a key role in the provision of mechanical ventilation and other critical care interventions. The pandemic has reinforced the importance of stringent infection control measures and patient safety protocols in anesthesiology. It was concluded, that consideration should be given for postponing non-urgent procedures and promoting non-operative treatment to delay or avoid the need for surgery [5,7,17,20]. In this situation is needed adaptability and flexibility. Anesthesiologists have had to rapidly adapt to the evolving situation, including changes in patient management, protocols and safety measures. This highlights the importance of flexibility and the ability to quickly adjust practices in response to emerging challenges [5,9]. Anesthesiologists have had to implement and adhere to strict guidelines to minimize the risk of viral transmission within healthcare settings. At first, for prevention of infection spread, created the protocol, postulating, that each patient which is going for elective or emergency surgery and is not tested previously, is infected with SARS Cov-2 [9,12,22,25]. For realization of this protocol was needed sufficient number of SARS Cov-2 laboratory tests, personal protection equipment and patient isolation areas [22,25]. Also, there was a need in minimization of clinical visits, optimization of elective surgery time and maximal homework and creation of two interchangeable medical teams which will work during two weeks and then will rest for the next two weeks [5,7,22]. For minimization of clinical visits, the use of telemedicine and remote monitoring tools has become more prevalent during the pandemic. Anesthesiologists have explored

virtual consultations, pre-anesthetic assessments, and remote monitoring of patients, reducing the need for in-person visits and minimizing exposure risks [14,16,21,25].

First recommendations, created in 2020 were concerned on safety during airway manipulations and perioperative care. According to them emergency situations must be avoided and tracheal intubation must not be delayed. During intubation personnel must wear at least a gown, N95 or higher mask, cap, face shield and gloves. Whenever possible, use rapid sequence intubation, avoid manual ventilation and multiple entries/exits to the isolation room. If possible, use negative pressure operating rooms and turn-off positive pressure. Consider general anesthesia for reducing coughing, for tracheal intubation use video laryngoscope, if intubation is not possible and prolonged mask ventilation is needing, use laryngeal mask [5-7,9,20,25]. Later publications had been shown the safety of regional anesthesia for COVID-19 patients [21,23]. At the same time, anesthesiologists concerned on the post-covid syndrome as a risk-factor of perioperative complications [3,15]. Particularly, COVID-19 survivors might have different health problems related to post-covid syndrome and therefore they are needing in careful risk assessment for surgery and anesthesia including

- Age, comorbidities and functional or frailty status
- Severity of recent SARS-CoV-2 infection, ongoing symptoms and vaccination status
- Complexity of surgery or surgical risk
- Potential impact of delayed surgery on patient's health.

Finally, all these approaches were postulated in ASA/APSF recommendations as follows

- Patients who have COVID-19-type symptoms should be screened and, if appropriate, tested before having an elective procedure. Physicians should consider the timing and symptoms of the infection to determine when patients are no longer infectious.
- Elective surgeries should not occur within two weeks of a COVID-19 infection, allowing anesthesiologists and surgeons to assess how severe the patient's symptoms are and to reduce unnecessary risk of transmitting the infection to health care professionals.

- Between two and seven weeks after the patient's COVID-19 infection, anesthesiologists and surgeons or proceduralists should conduct a risk assessment for that patient, including factors such as their age, severity of the infection and surgical risk.
- If the patient and the surgery are determined to be low risk, the anesthesiologist and surgeon should discuss with the patient about scheduling the procedure between two and seven weeks after the COVID-19 infection. That decision should take into account whether the risk of proceeding exceeds the risk of delay.
- Delay of the surgery beyond seven weeks should be considered if the patient continues to have COVID-19 symptoms.
- Facilities, surgeons and anesthesiologists should track patient outcomes of elective surgery after COVID-19, including complications and mortality.

Covid-19 characterized with different uncommon complications and presentations, such as hematoma of rectus abdominis muscle, which can be related to diagnostic and treatment challenge [19]. Recent publications are confirming, that the patients with previous COVID-19 infection have increased risk of perioperative deep venous thrombosis, pulmonary embolism, stroke, myocardial injury, acute kidney injury and death. According to retrospective study of Bryant et al. an increasing time interval between COVID-19 infection and surgery was associated with a decreasing risk of these postoperative complications [3,21].

All of this, despite the adaptability and flexibility of anesthesiologists, greatly impacted on the anesthesiologist workplace situation which can lead to burnout: depersonalization, reduced personnel accomplishment and emotional exhaustion. The study found that of the anesthesiologists surveyed in November of 2022 67.7% had a high risk for burnout, up 14.4% from March of 2020, and 18.9% had burnout syndrome, up 37% since 2020 [1,26,29].

Finally, as a result of this global experience of fighting against COVID-19 pandemic we understand that there are different common principles of anesthesiologist professional activity, which can be formulated as follows:

- Team Collaboration and communication: The interdisciplinary collaboration between anesthesiologists, intensivists, nurses, and other healthcare professionals has been crucial. Effective communication and teamwork have been essential in managing the surge of patients and ensuring optimal care delivery [13].
- Training and Education: The pandemic has highlighted the importance of ongoing training and education for healthcare professionals, including anesthesiologists. Staying abreast of the latest research, guidelines, and treatment modalities is crucial for adapting to rapidly changing circumstances [2,4,21,24].
- Resource Allocation and Ethical Decision-Making: Anesthesiologists, along with other healthcare providers, have faced challenging decisions regarding resource allocation and prioritization of care. Ethical considerations and decision-making processes have been critical in ensuring fair and just distribution of limited resources [16].
- Mental Health and Well-being: The demanding nature of providing care during a pandemic has emphasized the importance of mental health and well-being for healthcare professionals, including anesthesiologists. Support systems, access to mental health resources, and recognition of the emotional toll are essential components of a resilient healthcare workforce [1,18,26,29].
- Global Collaboration and Preparedness: The pandemic has highlighted the need for global collaboration and preparedness in the face of emerging infectious diseases. Anesthesiologists, like other healthcare professionals, can contribute to international efforts+ to share knowledge, resources, and expertise for a more coordinated response to future health crises [8,10].
- Technology Integration: The pandemic has accelerated the integration of technology into healthcare practices. Anesthesiologists have leveraged technology for remote consultations, electronic medical records, and telemedicine, leading to more efficient and streamlined patient care [14].

In summary, we can conclude that the COVID-19 pandemic has brought numerous challenges to the field of anesthesiology but has also provided valuable lessons in adaptability, collaboration,

patient safety, and the integration of technology. Pandemic affected all aspects of anesthesiologist professional life: everyday practice, learning, education and in addition they met with some rare clinical and surgical cases related to Covid-19. This unique experience is needed in future detailed analysis. We hope, that lessons from Covid-19 pandemic can inform future anesthesia practices, helping to build a more resilient and responsive healthcare system.

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