The unpredictable impact of COVID-19 leads us to reexamine contemporary practices, as illustrated by the fulminant complications in the authors' case report.[1] Here, *n* equals 1 and further studies are clearly needed to unpack how practice may have to adapt for the sake of our patients. Our field has been threatened before but prevailed due to its innovative spirit and unparalleled leadership. COVID-19 is here to stay and in an ever-so-globalized world, future outbreaks are not unlikely. As Martin Luther King, Jr echoed, "Darkness cannot drive out darkness: only light can do that." In these times of darkness, we need light: only through time, sharing experiences, and application of science can we once more illuminate our patients' lives.

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Commentary: The era of great uncertainty

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CENTRAL MESSAGE

During the COVID-19 pandemic, cardiac surgeons need to be aware that undiagnosed infection can cause unexpected catastrophic complications after urgent or emergent operations.

The current coronavirus disease 2019 (COVID-19) pandemic has had a significant impact on the practice of cardiothoracic surgery. Owing to the increasing burden on clinical resources and concern for nosocomial spread, the number of cardiac surgery cases has decreased dramatically. One study showed a 54% drop in cardiac surgical volume after restrictions were implemented.[1] The Society of Thoracic Surgeons recently published a patient triage guidance statement for the COVID-19 pandemic.[2] All nonurgent cases are recommended to be deferred, whereas care providers need to contemplate the balance between the risk of delaying treatment and the risk of acquiring nosocomial COVID-19.

Because each hospital is encouraged to adopt a mechanism by which patients can be screened for COVID-19 infection perioperatively, many centers have started screening all patients undergoing elective surgery. However, in urgent or emergent situations, such as type A aortic dissection, acute coronary syndromes, and acute valvular endocarditis, patients may need to be taken to the operating room without being tested for COVID-19 infection.

In this issue of the *Journal*, Salna and colleagues[3] report a case of a patient who underwent urgent coronary artery bypass grafting (CABG) and whose postoperative course

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was complicated by severe acute respiratory distress syndrome caused by COVID-19 infection. This case report is from New York, which was hit drastically by the COVID-19 pandemic. The patient, who had recently returned from Manilla and Hong Kong, presented with acute coronary syndrome and was found to have triple-vessel coronary artery disease with reduced left ventricular function. Preoperatively, he did not show any signs of respiratory infection, such as fever, cough, or dyspnea. He underwent urgent 3-vessel CABG.

On the day after surgery, the patient developed fever and progressively worsening diffuse pulmonary infiltrates on X-ray. He was found to be COVID-19–positive. His clinical course was also complicated with ST changes on electrocardiography, elevated cardiac enzyme levels, thromboembolic events in the brain and extremities, septic shock, and disseminated intravascular coagulation. Owing to a nonrecoverable neurologic status and inability to wean from vasopressors or the ventilator, his care was withdrawn, and he died. Considering the rapid deterioration of his clinical condition, the patient was most likely infected with COVID-19 before admission. Screening for COVID-19 was not done in this case owing to the urgency of the situation.

A variety of COVID-19 manifestations have been reported, but the effect of the virus on the cardiovascular system is still being defined.[4,5] There also are little data on the impact of COVID-19 infection on the clinical outcomes of cardiac surgery. A case similar to the current case has been reported from the United Kingdom.[6] A 63-year-old man underwent an elective 3-vessel CABG and tricuspid valve repair, and his initial postoperative course was uneventful. On postoperative day 1, he developed severe hypoxia with bilateral consolidation seen on X-ray. COVID-19 pneumonia was diagnosed by bronchial alveolar lavage. His respiratory condition continued to decline, and he died. The patient did not have any sign of preoperative respiratory infection, and thus COVID-19 screening had not been performed.

In addition to acute respiratory distress syndrome, COVID-19 is known to be associated with coagulation abnormalities and thrombosis.[7] In this article, the patient's postoperative course was adversely affected by COVID-19–induced hypercoagulability. Owing to the high prevalence of coagulopathy and thrombosis associated with COVID-19, D-dimer and fibrinogen levels are frequently monitored, and all hospitalized patients with COVID-19 undergo thromboembolism prophylaxis.[8]

As Salna and colleagues suggest, emergent cardiac surgery cannot stop in the wake of a global pandemic. In urgent or emergent situations, we may not have time to check the patient's COVID-19 status preoperatively. Therefore, in this era of great uncertainty, all cardiac surgeons might encounter the same situation, in which unforeseen complications occur following well-performed operations. We need to be aware that undiagnosed COVID-19 might be hidden, especially in urgent or emergent cases.

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