

## Editorial



# Lessons From Experience of Surgical Treatment for Severe Traumatic Brain Injury Patient Infected With COVID-19

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**Received:** Mar 27, 2022

**Revised:** Apr 12, 2022

**Accepted:** Apr 13, 2022

**Published online:** Apr 22, 2022

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### Conflict of Interest

The author has no financial conflicts of interest.

Coronavirus disease 2019 (COVID-19), which emerged at the end of 2019, has made several changes to the global economy, society, and medical field.<sup>1)</sup> Previous infectious diseases have broken out as short-term epidemics that have not lasted for more than 6 months or a year; therefore, no preparation has been made for a long-term epidemic such as COVID-19. Delays in diagnosis and surgery for emergency and trauma patients with COVID-19, wherein appropriate treatment should be provided, are fatal medical errors directly related to the patient's prognosis and death. If this causes an increase in the number of victims, then it is likely to be recognized as an unresolved social problem.

The frontline for COVID-19 treatment is being implemented in public hospitals, but there is no clear guideline for patients who need urgent operations and procedures, such as severe trauma patients infected with COVID-19. Currently, hospitals in Seoul are conducting a pilot project for surgical treatment by installing a hospital dedicated to COVID-19. For example, Chung-Ang University Hospital in Seoul proposed a government-sponsored "clinical pathway for emergency brain surgery."<sup>2)</sup> Many hospitals refer to this clinical pathway and consider it as a very useful strategy to treat patients. Particularly, treatment strategies for severe trauma patients from various departments and medical staff from the initial treatment are very important for determining patient prognosis; if surgical treatment is required, then the process is also very complicated; hence, treatment in regional trauma centers should gain focus. If such severe trauma patients are confirmed to be infected with COVID-19, then there is an increased risk of infection to other patients receiving treatment, which could add an excessive work burden to medical staff.

Based on my experience of treating severe traumatic brain injury patient infected with COVID-19 at a regional trauma center in this chaotic era, I would like to summarize important considerations in surgical treatment and discuss the need for standard treatment guidelines for government support.

I would like to present some important points in patient treatment that this hospital learned when conducting emergency surgery on a patient with COVID-19. The patient had visited the trauma center for an open skull fracture together with severe hemorrhage in the brain after a motorcycle accident in August 2021. First, it is necessary to secure the patient's transfer pathway before treatment, and a "patient transport team" should be formed to reduce contact with other patients and ensure the speed of transfer. This is the most important concept in infection control. The transport team must comprise at least 3–4 medical staff, transport

staff, pathway blocking staff, and the infectious team for directing and controlling them. In summary, in the emergency room, it is important to urgently transport patients to an isolated room as soon as they have a confirmed diagnosis of COVID-19, and medical staff in close contact with the infected patients should thoroughly prevent the spread of COVID-19 to other patients by wearing personal protective equipment completely. Second, close cooperation among surgeons, anesthetic teams, and surgical scrub nurses is essential during the operation. If the operation time is prolonged or the surgeon becomes excited during the operation, then fogging occurs in the worn goggles, which makes the operation difficult. Therefore, it is important that a well-cooperative surgical team is deployed to perform surgery quickly. Surgery for COVID-19 patients requires minimal medical personnel and backup medical staff to recruit them if the operation time is prolonged. By reducing the fatigue of medical staff with these alternative medical personnel, it is necessary to prevent problems in preparing for the next patient's surgery and treatment. Finally, critical care after surgery should be conducted in cooperation with the surgical team and the infection control team who participated in the surgery. The surgical team should minimize examinations and patient rounds to reduce unnecessary contact with patients and decrease the possibility of secondary infection. In addition, the infection control team should control the patient's infectivity and reduce possible postoperative systemic complications and quickly consider transfer to the general room by identifying in advance when the patient's infectivity decreases.

A serial process of patient treatment, including surgical treatment of infected patients, is impossible in the current system of private university hospitals or general hospitals without government support or control. In general, treatment for COVID-19 patients in public hospitals such as local medical centers should be focused, but these public medical centers are currently focusing only on treating pneumonia and systemic infectious diseases caused by COVID-19. Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), which is already prevalent in the local community, is deeply penetrating into severely critical patients such as severe traumatic injury patients or emergency cardio-cerebrovascular patients, which makes it necessary to provide emergency treatment. Additionally, these regional emergency or trauma centers cannot take the characteristics of fully controlled public hospitals, as they normally require general treatment, not COVID-19 patients, and at the same time, treatment and surgery of COVID-19 patients. Therefore, intensive care for COVID-19 patients in need of emergent treatment requires forming a network of local communities for sufficient economic support from the government and adequate treatment to avoid gaps in patient care.

Since March 2022, the incidence of COVID-19 has been increasing exponentially in South Korea. This has been a problem in Korea, and it is believed that it is entering the "With Corona" phase as a global phenomenon.

In this situation, the medical community should always take steps ahead and prepare for future situations. This situation has already occurred and countermeasures cannot be prepared for other diseases in the future. SARS-CoV-2 will be considered a common virus after a particular point, but it will be important for the medical community to always be cautious and focus silently on patient treatment until reaching that point.

Government support is urgently needed to achieve these positive results. The government should be familiar with and implement the following measures: First, the government should listen to the opinions of medical staff. Medical professionals at the forefront of patient treatment are doing their best for the patients daily. As the government's policies

and measures change, medical confusion regarding patient treatment is bound to occur. Therefore, it is time for developing a consistent policy according to the opinions of the medical community. Second, the government should develop and implement protocols or guidelines to treat severely or mildly infected patients with COVID-19. In addition, these protocols should be subdivided for patients with severe emergency conditions, such as patients with severe trauma or cerebrovascular injury, and create awareness about these protocols among all regional medical hospitals.

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