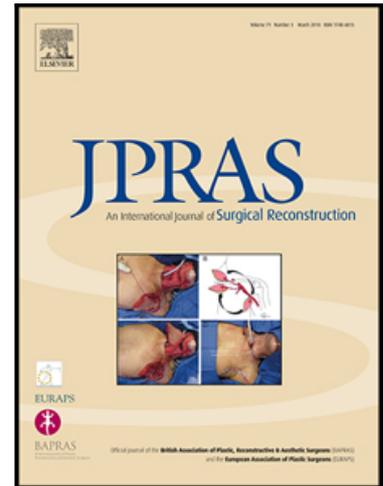


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The decline in mild trauma patients due to the Covid-19 epidemic may have been transient

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This paper has not been presented in any academic conference so far.

Keywords: trauma surgery, COVID-19, pandemic, multicenter study

Dear Editor

We reviewed trauma surgery statistics one year after the start of the Covid-19 epidemic in Japan and published a report in 2021 stating that the number of mild trauma patients decreased due to the effects of Covid-19. (Mild trauma surgery has decreased due to the COVID-19 pandemic.

Journal of Plastic, Reconstructive & Aesthetic Surgery (2021)), and this time, we continued to investigate the trends of trauma surgery patients in 2021, which was the second year of the COVID-19 pandemic.¹⁾ In Japan, the first COVID-19 patient was diagnosed in February 2020; since then, there have been seven outbreaks as of July 2022.

Between 2020 and 2021, COVID-19 was prevalent five times in Japan, as follows: from April 15, 2020, to June 30, 2020; from July 20, 2020 to September 24, 2020; from December 17, 2020 to March 6, 2021; from May 5, 2021 to June 23, 2021; and from July 30, 2021 to September 25, 2021 (Figure 1). Central and local governments called for behavioral restrictions (stay-at-home (SAH) order) during these periods. Since the SAH order period is issued by the local government, there is a range of issuance periods, but it was about 160 days in 2020 and about 180 days in 2021.

In Japan, the number of COVID-19-infected patients in 2020 was 232,495, and in 2021, it was 1495773, which indicates that the number has increased more than 6 times in one year.²⁾

We investigated changes in trauma surgery trends between 2020, when COVID-19 first appeared, and the following year. We performed a retrospective review of a prospectively

maintained trauma database at 12 general hospitals: Fukuoka Tokushukai Hospital (Kasuga City), Ehime Prefectural Central Hospital (Matsuyama City), Nagasaki Harbor Medical Center (Nagasaki City), Oita Tsurumi Hospital (Beppu City), Oita Nakamura Hospital (Oita City), Matsue Red Cross Hospital (Matsue City), Yamaguchi Prefectural Grand Medical Center (Hofu City), Sasebo City General Hospital (Sasebo City), Miyazaki Konan Hospital (Miyazaki City), Kitakyushu General Hospital (Kitakyushu City), Kitakyushu City Yahata Hospital (Kitakyushu City), and National Nagasaki Medical Center (Omura City), that have more than 350 beds and are responsible for regional emergency medical care. Patients undergoing plastic trauma surgery from 2015 to 2020 were evaluated. The number of plastic emergency surgery patients receiving general and spinal / local anesthesia before the COVID-19 pandemic was counted (2015-2019), and compared with the 2020 and 2021 numbers during the pandemic. A total of 213,970 patients with injuries underwent surgery in the 5 pre-epidemic years (Figure 2).

The average number of emergency trauma patients in the 12 hospitals from 2015 to 2019 (before the COVID-19 pandemic) was 4279.4, with a 95% Confidence Interval (CI) of 3768.4-4790.4, and that in 2020 and 2021, the COVID-19 pandemic period, was 3825 and 4465, respectively. These results indicate that the total number of trauma surgeries did not change significantly during the COVID-19 pandemic. Among them, the average number of patients who underwent surgery under general anesthesia before the COVID-19 pandemic was 953.4

with a 95% CI of 419.2-1485.6, and that in 2020 and 2021 was 1005 and 1128, respectively, which also did not show a significant difference. On the other hand, the average number of patients who underwent surgery under spinal or local anesthesia before the COVID-19 pandemic was 3374.8 with a 95% CI of 3215.5-3534.1, and that in 2020 and 2021 was 2820 (-16.4%) and 3347(-0.8%), respectively. Only the number of mild surgeries in 2020, the first year of the epidemic, showed a significant decrease, but returned to the pre-epidemic level the following year (Table).

During the COVID-19 epidemic, medical resources became tight due to this infection, and so it was recommended to avoid urgent surgery. Furthermore, the possibility of COVID-19 aerosol infection during intubation was also pointed out, and there was a tendency to reduce surgeries involving general anesthesia³⁾. However, it is not possible to avoid surgeries for emergency patients suffering trauma. General anesthesia may be required depending on the severity of the injury and age.

Therefore, the reason for the decrease in minor trauma surgery in the first year of the pandemic is considered to be that people kept to SAH well and refrained from going out in order to control the epidemic. However, the following year, people became accustomed to COVID-19, and as multiple vaccinations became widespread, SAH was no longer thoroughly enforced, resulting in increased social activity and increased minor trauma.

Ethical Approval

The protocol for the research project has been approved by a suitably constituted Ethics

Committee of National Hospital Organization Nagasaki Medical Center.

Declaration of Competing Interest

The authors have no conflicting financial interest.

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Table: Number of emergency trauma surgeries before the COVID-19 pandemic and in 2020

and 2021

	2015-2019			Patients	Patients
	Mean	Standard Deviation	95% Confidence Interval	in 2020	in 2021
General anesthesia	952.4	192.5	419.2-1485.6	1005	1128
Spinal/local anesthesia	3374.8	57.5	3215.5-3534.1		3347
Total surgeries	4279.4	184.5	3768.4-4790.4	3825	4465

t distribution was used

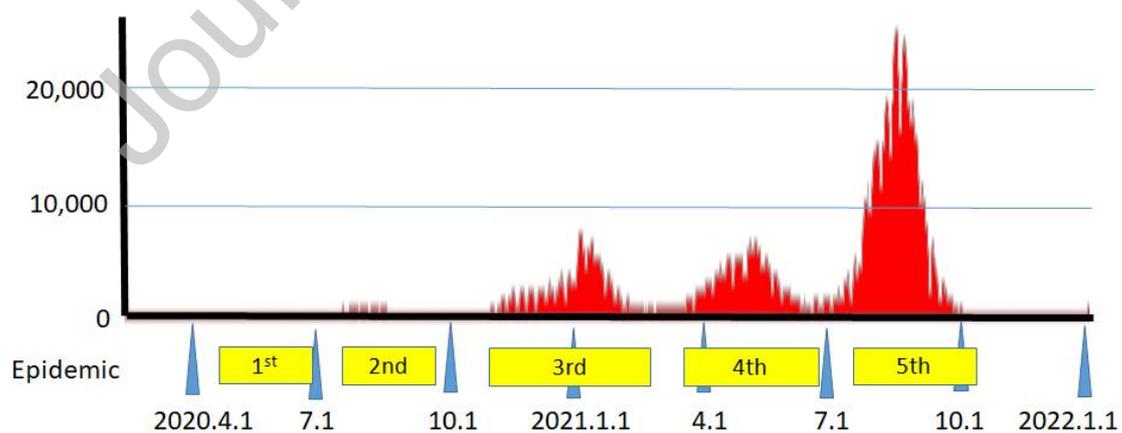


Figure 1: Number of COVID-19 patients in Japan between 2020 and 2021

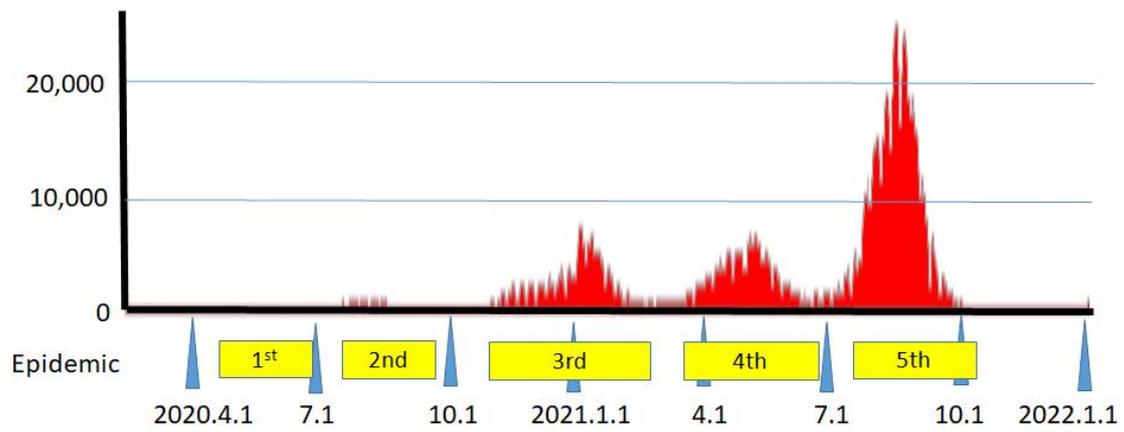


Figure 2: Number of trauma surgeries in 2015-2021. Mild trauma surgery decreased significantly in 2020 due to the Covid-19 epidemic, but recovered to pre-Covid-19 epidemic levels in 2021 (arrows).