

# COVID-19 and Coronary Intervention in Japan

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The coronavirus disease 2019 (COVID-19) pandemic has had a detrimental impact on the healthcare system that was confronted by an overwhelming number of infected patients as well as a shortage of healthcare workers, especially in the acute care setting. Acute myocardial infarction (AMI) is one of the most common and representative diseases that require prompt treatment via thrombolysis or more preferably via coronary revascularization with percutaneous coronary intervention (PCI) or coronary artery bypass surgery. In the prepandemic world, achieving a door-to-balloon time of under 90 minutes for PCI cases had been widely accepted as a quality metric because early treatment can reduce in-hospital mortality<sup>1)</sup>. However, achieving such a goal has become a major challenge due to the necessary but rigorous protocols established to mitigate the risk of infection. To address these issues, major academic societies from the United States and Japan have proposed modified strategies for coronary revascularization<sup>2, 3)</sup>. The impact of the COVID-19 pandemic on AMI care differed largely among countries. In China, changes in access to care, delays in treatment timelines, changes in reperfusion strategies, and an increase in in-hospital mortality and heart failure in patients with ST-elevation myocardial infarction (STEMI) were observed from an earlier phase of the pandemic<sup>4)</sup>. In the United States, a concomitant diagnosis of COVID-19 was significantly associated with higher rates of in-hospital mortality compared with patients without a diagnosis of COVID-19 from the year 2019<sup>5)</sup>. A serial nationwide survey (in mid-April, late-April, and mid-May 2020) conducted by the Japanese Association of Cardiovascular Intervention and Therapeutics demonstrated that most hospitals opted to perform

primary PCI in the usual manner at the beginning of the pandemic; however, as the pandemic progressed, hospitals in populated areas transiently withheld the number of PCIs for chronic coronary syndrome and high-risk acute coronary syndrome indications but not for STEMI cases. After the lockdown was lifted in most prefectures in mid-May, the number of PCIs gradually recovered to its normal value<sup>6)</sup>. Furthermore, COVID-19 screening tests were performed at a significantly higher rate during the third wave than during the second wave, and personal protective equipment were more widely available over time<sup>7)</sup>. A recent study by Watanabe *et al.* is aligned with the survey results and provides evidence on how Japanese PCI hospitals were able to maintain the standard level of care, especially after the third wave of the pandemic. Watanabe *et al.* performed an interrupted time series analysis using the Diagnosis Procedure Combination administrative database from April 2018 to February 2021<sup>8)</sup>. Their study was important because they quantitatively demonstrated care and outcomes of patients with coronary heart disease and supplemented qualitative studies to understand the possible reasons that Japan was able to outlast the potentially harmful impact of the pandemic. Collaborations between administrative databases, clinical registries, patient-reported outcomes as well as surveys are warranted to understand the true impact of the pandemic and build a resilient healthcare system to confront future pandemics.

## Conflicts of Interest

None.

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