

# Mechanical Thrombectomy and Thrombolysis with Stent Placement for Superior Mesenteric Artery Thrombosis in a COVID-19 Patient

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COVID-19 primarily affects the respiratory system, from mild to severe symptoms such as acute respiratory distress syndrome. Owing to the global inflammatory response and endothelial damage, COVID-19 may predispose to coagulation disorders that can lead to thrombotic complications.<sup>1,2</sup> Here, we present a case of superior mesenteric artery (SMA) thrombosis as a consequence of COVID-19, which was treated with an endovascular approach by mechanical thrombectomy with thrombolysis and stent placement in the SMA.

An 88-year-old patient with a history of diabetes, hypertension, and end-stage renal disease presented to the emergency department complaining of abdominal pain and vomiting. She was COVID-19 positive without fever or respiratory symptoms. Contrast-enhanced abdominal computed tomography (CT) scan demonstrated SMA thrombosis with diffusely reduced bowel enhancement (–Fig. 1). The patient was considered high risk for surgical intervention and was referred to interventional radiology (IR) for endovascular revascularization of the SMA. SMA angiography confirmed proximal thrombosis with preserved flow to jejunal branches and absent flow to colonic branches (–Fig. 2). Next, 4 mg recombinant tissue plasminogen activator (rtPA) was used to lase the thrombus, and overnight thrombolysis was performed at a rate of 1 mg/h for 16 hours using a 5 Fr, 7 cm length Cragg-McNamara infusion catheter (Medtronic, Minneapolis). Subsequent angiography demonstrated significant residual thrombus within the SMA. Using left

brachial access with a 90 cm 6-Fr sheath, successful thrombectomy was performed using CAT6 Indigo System (Penumbra, Alameda, CA, USA). Following this, a 7 mm × 36 mm Valeo stent (Bard Inc., New Providence, NJ, USA) was deployed at the SMA origin to treat residual stenosis (–Fig. 3). The final angiogram demonstrated an excellent flow through the SMA and its main branches (–Fig. 4). The patient developed left brachial artery vascular sheath-related dissection and thrombosis that required placement of a 5 mm × 5 cm Viabahn stent graft (WL Gore, Flagstaff, Ariz, USA). The patient was discharged home after improving clinically and resuming oral intake. Two months later, the patient presented with bowel ischemia. However, a CT scan showed a patent celiac axis and SMA stent with occluded inferior mesenteric artery and thrombosis in one of the distal SMA branches. The patient passed away due to bowel ischemia complicated by sepsis and disseminated intravascular coagulation.

COVID-19 patients can develop severe coagulopathy even without respiratory symptoms.<sup>3</sup> Previous cases in the literature with SMA thrombosis related to COVID-19 were treated surgically and one medically with a high mortality rate.<sup>4</sup> This case demonstrates that arterial thrombotic events in the context of COVID-19 may be treated with endovascular techniques to obviate the need for surgical interventions. Additionally, it illustrates the severe thrombotic complications of COVID-19.

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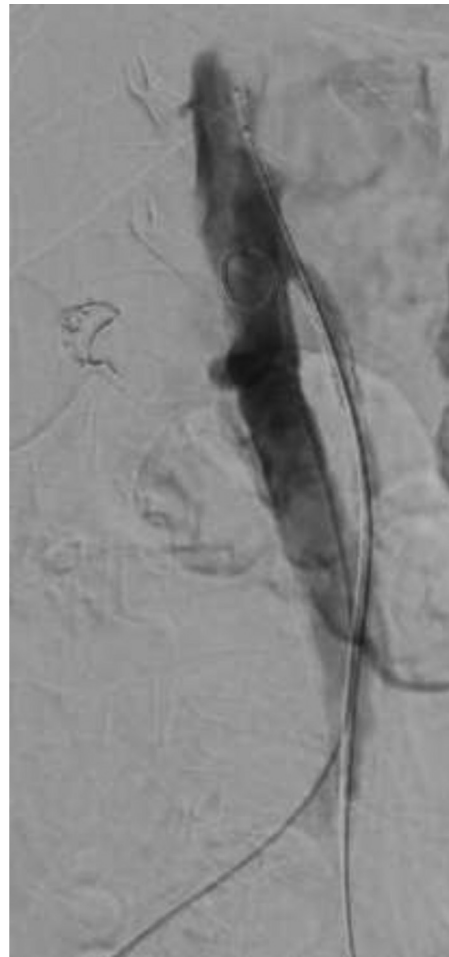
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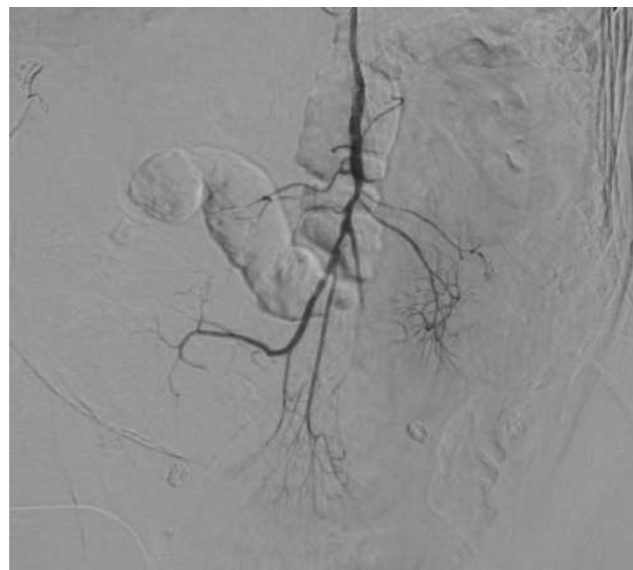
**Fig. 1** Coronal CT image of the abdomen in arterial phase showing filling thrombosis of the superior mesenteric artery (arrow). CT, computed tomography.



**Fig. 2** SMA angiography showing the filling defect of the proximal part.



**Fig. 3** SMA angiography post thrombectomy and stent placement.



**Fig. 4** Final angiogram showing improved flow in the superior mesenteric artery and its branches.

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**Conflict of Interest**

None declared.

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