

# A complex case of high-risk pulmonary embolism: mechanical thrombectomy, systemic thrombolysis and extracorporeal membrane oxygenation, all in one

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**KEYWORDS:** extracorporeal membrane oxygenation, high-risk pulmonary embolism, mechanical thrombectomy.

**CITATION:** *Cardiol Croat.* 2024;19(11-12):544. | <https://doi.org/10.15836/ccar2024.544>

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**Introduction:** Pulmonary embolism is a common diagnosis encountered in everyday practice. We present a case of a high-risk pulmonary embolism patient in which we were forced to use both thrombolysis and mechanical thrombectomy together with ECMO for stabilization<sup>1</sup>.

**Case report:** 40-year-old female patient presented as an out-of-hospital cardiac arrest and was brought by ambulance to our Emergency Department (ED) with ongoing resuscitation. The initial rhythm was pulseless electrical activity (PEA). Upon arrival at the ED, resuscitation was continued and ROSC was achieved, the patient was intubated and mechanical ventilation was started. Due to hemodynamic instability, noradrenaline and dobutamine were administered. An urgent CT pulmonary angiography was performed and filling defects in terms of massive pulmonary embolism were described in both pulmonary arteries. Considering the critical condition of the patient and recent surgical treatment, it was decided to perform mechanical thrombectomy. The procedure was performed bilaterally with 20 and 24 F catheters, and a larger amount of thrombotic masses were removed, mainly from the right pulmonary artery. The procedure was performed without periprocedural complications. After the patient was transferred to the CICU, an echocardiogram was performed, which revealed a dilated right ventricle with signs of pressure overload. About an hour after the thrombectomy, hemodynamic deterioration occurred, which resulted in further escalation of the dose of vasopressors and inotropes. Due to significant clinical deterioration of the patient, systemic thrombolysis was applied. Despite this, there was no improvement, and the patient was in refractory cardiogenic shock which led to decision to place a veno-arterial extracorporeal membrane oxygenation (ECMO). Shortly after the ECMO circuit establishment, native cardiac function deteriorated with minimal opening of the aortic valve visualized on bedside echo. Inotropic therapy with levosimendan was initiated and after a few hours cardiac function started to improve. The next day the pulse pressure was over 20 mmHg and lactate levels dropped significantly. On the third day, the patient was hemodynamically stable with minimal vasopressor and inotropic support, VA ECMO was removed. Over the next few days, the patient was hemodynamically stable with recovered respiratory function. A follow-up echocardiogram showed a normal size of the right ventricle with normal longitudinal function and the patient was transferred to the cardiology department where she fully recovered.

**Conclusion:** There are patients for whom pulmonary embolism can be a lethal diagnosis. In an acute setting, with hemodynamically unstable patient, temporary use of mechanical cardiopulmonary support<sup>2</sup> has shown to be very helpful in stabilizing the patient.

**RECEIVED:**  
September 29, 2024

**ACCEPTED:**  
October 31, 2024



## LITERATURE

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