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Percutaneous pulmonary thrombectomy as a life-saving therapy in high-risk pulmonary embolism with obturative shock in early pregnancy

Short title: Percutaneous pulmonary embolectomy in pe during the early pregnancy

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43-years old pregnant woman was admitted to the Department of Cardiology with cardiogenic shock due to acute pulmonary embolism. It was the 10th week of the patient's fifth pregnancy and the 5th embolic episode in pregnancy. During three previous pregnancies, the patient suffered from deep venous thrombosis and her last pregnancy was complicated by a low-risk pulmonary embolism. All pregnancies were ended on time in natural births without additional pathologies. Four of the woman's children are perfectly healthy. Because of recurrent thromboembolism, the patient was treated with enoxaparin 1 × 1 mg/kg during pregnancy. At the moment of admission the woman was in an extremely severe state with cardiogenic shock with blood pressure 100/80 mm Hg on high doses of pressors, heart rate 100/min and only 89% saturation on 100% oxygen. The patient was intubated and treated with intravenous heparin. Computed tomography (CT) scan revealed proximal clots in the main pulmonary arteries with almost total occlusion of the right pulmonary artery (RPA, **Figure 1A**). Echo confirmed right

ventricle insufficiency (Figure 1B, C). According to the guidelines high-risk PE should be treated with reperfusion therapy (t-PA), but on the other hand, pregnancy is a relative contraindication for thrombolytic therapy [1]. Moreover, we have known, that the risk of pulmonary embolism (PE) and thrombolysis in pregnancy are quite high [2] and in the case of thrombolysis administration, we were afraid of haemorrhagic intrauterine complications and potential loss of pregnancy. In the case of contraindications to pharmacological reperfusion, the guidelines give priority to cardiosurgical embolectomy which was also considered [1]. Because of the high mortality of surgical thrombectomy [3], finally, we decided to perform pulmonary catheter embolectomy.

Based on pulmonary arteriography through femoral vein access, we confirmed huge proximal clots in RPA and smaller clots in the left pulmonary artery (LPA) (Figure 1D) During the next step we performed suction thrombectomy using Penumbra Indygo 8 F device with separator and we removed huge thrombus from RPA (Figure 1E) obtaining the restoration of blood flow in RPA (Figure 1F). The woman received only 17 mGy of X-rays and 70 ml of contrast media. The patient left the lab in a much better state with a blood pressure of 100/70 mm Hg on minimal pressors flow and oxygen saturation of 95%. In the next 2 hours, the patient's condition was quite well, but in the third hour, the patient started to deteriorate. The most probable reason for deterioration after initial improvement was either peripheral embolization or developing right ventricular failure. Because of the patient's state we decided venous — arterial extracorporeal membrane oxygenation (ECMO) insertion. In the next hours, the patient's condition was systematically improved and allowed for ECMO removal on the third day and extubation on the fifth day. The patient was rehabilitated during the next days and discharged on the day eleventh on enoxaparin. During follow-up the patient's state was quite good with dyspnoea in New York Heart Association 2 class, without right ventricle enlargement. The woman gave birth to a healthy baby (Apgar scale = 9) in the 38th week of pregnancy.

Article information

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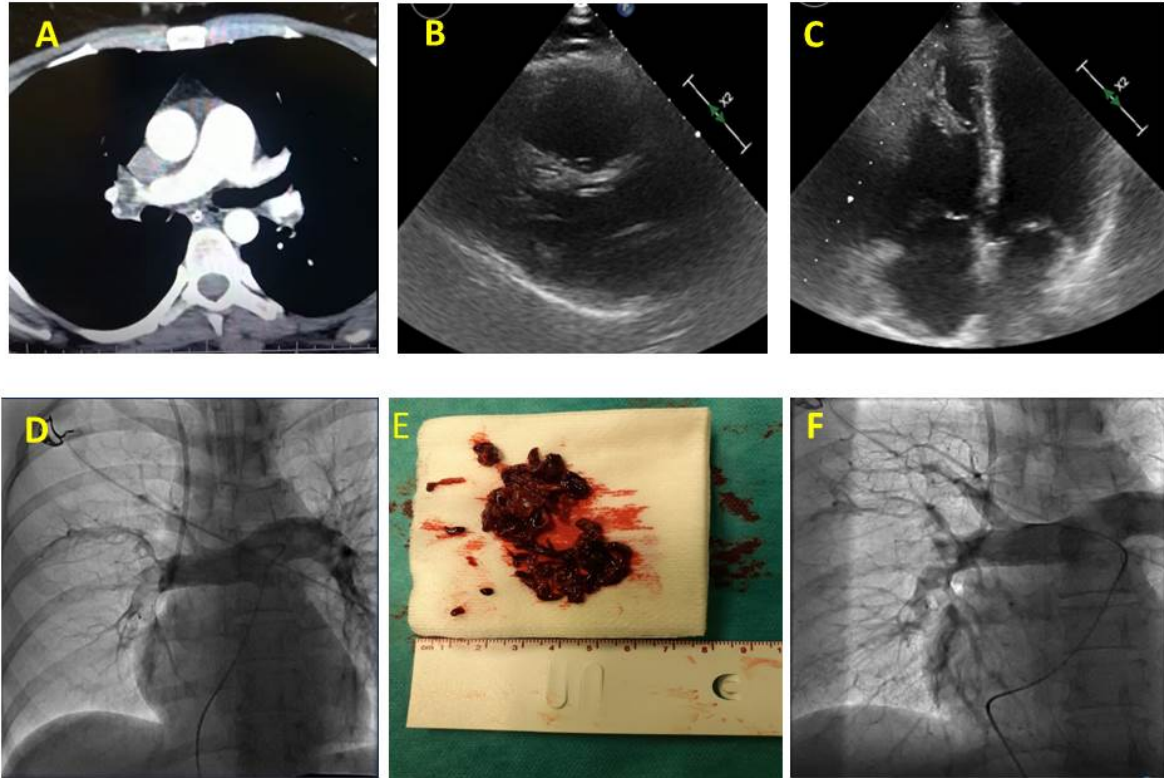


Figure 1. **A.** Computed tomography (CT): proximal clots in the main pulmonary arteries with almost total occlusion of the right pulmonary artery. **B.** 2D-echocardiography: right ventricle enlargement in long axis parasternal view. **C.** 2D-echocardiography : right ventricle enlargement in 4-chamber view. **D.** Pulmonary arteriography: huge proximal clots in right pulmonary artery and smaller clots in the left pulmonary artery. **E.** Huge thrombus removed from right pulmonary artery. **F.** Pulmonary arteriography: The final result — restoration of blood flow in right pulmonary artery