

CLINICAL VIGNETTE

Successful treatment of intermediate-high-risk pulmonary embolism with aspiration thrombectomy: first experience in Poland

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Despite ongoing significant improvements in the management of pulmonary embolism (PE), the mortality rate in high-risk and intermediate-high-risk groups of patients remains high, mostly due to underuse of thrombolysis resulting from increased bleeding risk. Noteworthy progress in interventional cardiology has made percutaneous catheter-directed thrombectomy (CDT) a real alternative to surgical embolectomy in acute PE. CDT is proposed as an integrated part of PE treatment recommended by the pulmonary embolism response team (PERT), mostly dedicated to the management of haemodynamically unstable acute PE and patients with contraindication to thrombolysis. Currently, we report the first experience of Indigo System's Continuous Aspiration Mechanical Thrombectomy (Indigo CAT8 XTORQ, Penumbra, Alameda, CA, USA) in the treatment of intermediate-high-risk PE with relative contraindication to thrombolysis. A 27-year-old obese woman, after left knee arthroscopy seven days prior to hospitalisation, with a history of hormonal contraception therapy, was admitted to the intensive care unit after syncope. Urgent computed tomography angiography showed bilateral thromboembolism obstructing both main lobar pulmonary arteries. Early mortality risk was assessed as intermediate-high because of echocardiographic signs of right ventricular (RV) dysfunction (tricuspid annular plane systolic excursion was 12 mm, right to left ventricular ratio > 1) and elevated levels of cardiac troponin T (0.1 pg/mL, reference range 0–0.014 pg/mL) and N-terminal pro-B-type natriuretic peptide (NT-proBNP; 4447 pg/mL, reference range 0–300 pg/mL). Despite treatment with full-dose low-molecular-weight heparin, progressive clinical deterioration was observed, with persistent sinus tachycardia > 120 bpm, systemic blood pressure < 110 mmHg, signs of RV dysfunction, and hypoxemia with SpO₂ < 90%, indicating increased risk of PE-related in-hospital complications. Due to relative contraindications to systemic fibrinolysis (significant haematoma of the left knee after recent surgery) our local PERT decided to perform CDT using the Indigo system with a CAT8 thrombectomy catheter. Pulmonary angiography performed from the right jugular vein with a 6-F pigtail catheter revealed massive bilateral PE (Fig. 1A, B). Aspiration pulmonary thrombectomy with a separator wire was performed. The separator wire was advanced and retracted through the aspiration catheter at the proximal margin of the primary occlusion to facilitate clearing and removal of the thrombus from the catheter tip (Fig. 1C, D). A large thrombus obstructing the left lower and left main lobar arteries was fragmented and removed through the 8-F catheter with subsequent blood flow improvement in the left pulmonary artery (Fig. 1E, F). Following aspiration thrombectomy, the patient's clinical status gradually improved, and she was transferred to the cardiac intensive care unit. CDT duration, from the decision of PERT to the return of the patient to the intensive care unit was less than 120 min. After the procedure pleural chest pain diminished, heart rate dropped below 90 bpm, and dyspnoea resolved. Blood loss during the procedure was estimated at 300 mL and caused an insignificant drop in the haemoglobin level. Anticoagulation was continued with body weight-adjusted, low-molecular-weight heparins. Seven days after the aspiration thrombectomy a control echocardiogram showed complete resolution of RV dysfunction, troponin T levels were below the threshold of detection, and NT-proBNP levels dropped to 66 pg/mL. The patient was discharged home in good general condition on oral anticoagulation. We believe that PERT can offer immediate, efficient treatment of decompensated acute PE with contraindications for thrombolysis. To our knowledge this is the first report of successful aspiration thrombectomy in an intermediate-high-risk patient with acute PE in Poland.

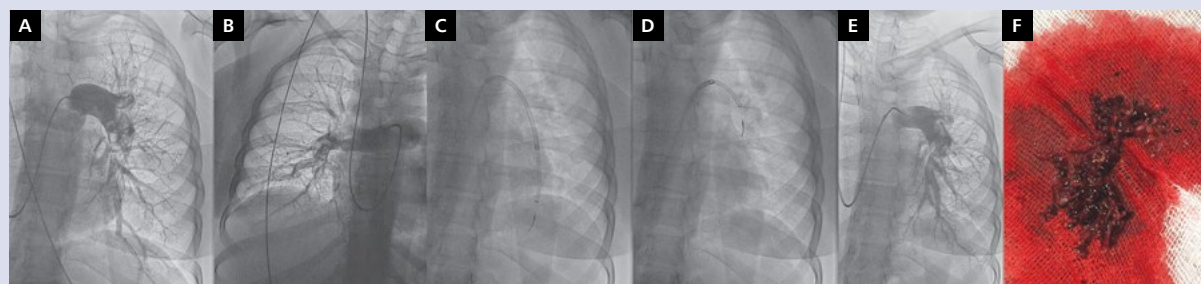


Figure 1. Images from a 27-year-old woman with intermediate-high-risk acute pulmonary embolism successfully treated with aspiration thrombectomy. Selective left (A) and right (B) pulmonary artery angiography before aspiration thrombectomy with a 6-F pigtail catheter confirmed bilateral massive pulmonary thromboembolism; an 8-F Indigo CAT aspiration catheter with a separator wire was advanced across the thrombus into the left lower lobar (C) and left main lobar (D) pulmonary arteries, and successful aspiration was performed; E. Post-treatment pulmonary angiogram showed resolution of most of the thrombus in the left lower and left main lobar pulmonary arteries; F. Extracted thrombi from the left pulmonary artery

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