

# Extra-corporeal cardiopulmonary resuscitation in the treatment of cathlab complication

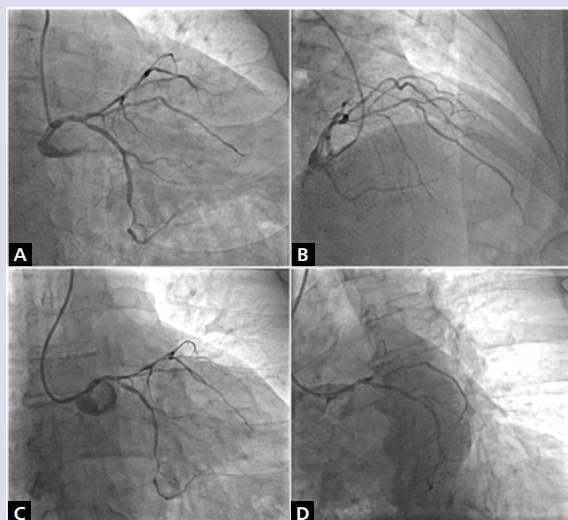
Pozaustrojowa oksygenacja membranowa w leczeniu powikłania badania naczyniowego

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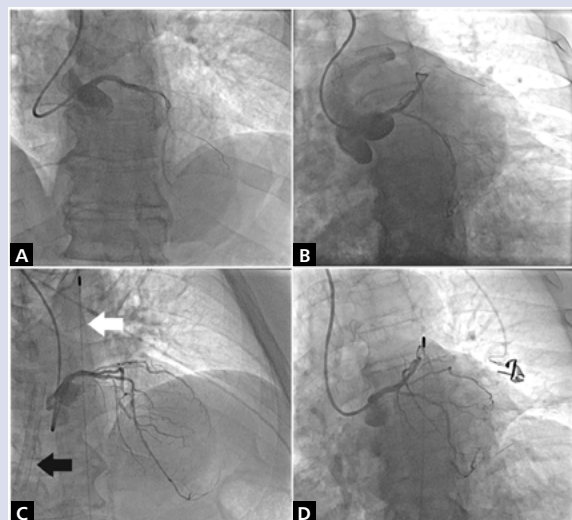
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A 68-year-old man with a history of chest pain and a positive result of exercise tolerance test was scheduled for elective coronary angiography. Echocardiographic examination performed on admission showed normal left ventricular function with an ejection fraction (EF) of 58%. In angiography total occlusion of the right coronary artery and significant stenosis of the left circumflex were found. Furthermore, ambiguous lesions in the left main (LM) and left anterior descending artery (LAD) were observed (Fig. 1A, B). In order to assess its physiological significance, a fractional flow reserve (FFR) examination was started. Due to vessel tortuosity and difficulties in LAD wiring, an additional guidewire was placed into the vessel but failed to pass through the mid-LAD bending and was left in the large diagonal branch (Fig. 1C). After prolonged manipulation with the FFR wire, the patient complained of chest pain, and angiography showed acute occlusion of LAD (Fig. 1D). Rescue angioplasty was started. Consecutive balloon-catheter inflations failed to re-open the artery, and the patient developed cardiac arrest. During cardiopulmonary resuscitation (CPR), drug-eluting stents were implanted, covering the LM and proximal LAD segment; however, angiography showed a no-flow phenomenon, and no spontaneous rhythm restoration was seen (Fig. 2A, B). Via groin incision, femoral vein and artery cannulas were inserted for the extracorporeal membrane oxygenation (ECMO) system. After haemodynamic stabilisation, angioplasty was completed and normal epicardial flow was restored (Fig. 2C, D). The patient was transferred to the intensive care unit where, 4 h later, he was extubated and regained consciousness. He was gradually weaned off ECMO, and the device was surgically explanted 15 h after insertion. Echocardiography showed akinesis of the lateral wall, as well as the apical segment of the anterior and inferior walls with an EF of 44%. No neurological deficits were observed, and the patient was discharged home after prolonged rehabilitation. In today's clinical practice, FFR is considered to be a routine and safe procedure with a complication rate of less than 1%. Cardiac arrest requiring prolonged CPR during scheduled examination is also a very rare cathlab situation. However, a well-defined procedure should be available in every institution in case of this unlikely condition occurring. In case of standard CPR procedure futility, the introduction of mechanical circulatory support with e.g. an ECMO device should be considered. This concept, known as extracorporeal CPR, is supposed to have a beneficial effect on survival in cases of in-hospital cardiac arrest. ([Supplementary video files — see journal website](#))



**Figure 1.** A, B. Significant stenosis in left circumflex, ambiguous lesion in left main and left anterior descending artery (LAD); C. Angioplasty guidewire placed in the diagonal branch; D. Abrupt LAD occlusion



**Figure 2.** A, B. No-flow phenomenon following left main and left anterior descending artery stent implantation; C, D. Restored flow and final angioplasty result after extracorporeal membrane oxygenation (black arrow indicates atrial cannula) and intra-aortic balloon pump (white arrow) placement

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**Conflict of interest:** none declared

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