# Emergency mechanical thrombectomy to treat embolic stroke complicating catheter ablation of cardiac arrhythmia

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A 75-year old male patient with a complex medical history (myocardial infarction, diabetes mellitus, heart failure with ejection fraction of 35%, renal transplant, and resynchronization therapy cardioverter-defibrillator) was transferred to our clinic due to an electrical storm. His symptoms persisted for a month. Device interrogation revealed 42 episodes of ventricular tachycardia (VT) with a heart rate of 185 bpm, terminated with antitachycardia pacing. No antiarrhythmic treatment had been used before. He had no history of neurologic deficits.

Echocardiography confirmed the presence of lateral, inferior and infero-basal scar. No thrombus was found in the left ventricle (LV). The patient was referred for transaortic catheter ablation of VT substrate with the use of a 3-dimensional mapping system. In local anesthesia, the right femoral artery was cannulated, and an ablation catheter was introduced without any difficulty to the LV. Intravenous heparin (100 U/kg) was administered as soon as the arterial sheath was inserted, and the first activated clotting time was 314 seconds. Electroanatomical mapping of the LV was started, and soon we observed deterioration of the patient condition — loss of contact and symptoms of right-sided hemiparesis, however, with no signs of hemodynamic instability. The consulting neurologist found the patient to be conscious, in mixed type aphasia, and right hemianopsia, hemiplegia, and hemihypoesthesia. A stroke of the left (dominant) cerebral hemisphere was diagnosed and the arrhythmia ablation procedure was aborted. Due to prior administration of heparin, the patient was disqualified from thrombolysis. However, he still met the criteria for mechanical thrombectomy because 1) computed tomography (CT) angiography revealed a large-vessel occlusion (segments M1 and M2 of the left middle cerebral artery); 2) cerebral plain CT excluded cerebral bleeding; 3) the time from stroke onset was <6 hours; 4) ASPECTS score was >6 (10 in that case), NIH Stroke Scale was >6 (21 in that case) [1]. The patient was then transferred to the interventional radiology laboratory (within the radiology unit in our hospital). Emergency mechanical thrombectomy of the left middle cerebral artery was performed, using the existing vascular access (8 F sheath) with optimal angiographic effect (TICI 3). Angiographic scans pre- and post-procedure are shown in Figure 1. Embolic material macroscopically consistent with ruptured atherosclerotic plaque was removed from the occluded artery with stent-retriever. During the following days, the patient experienced the withdrawal of all neurologic deficits. Follow-up CT scan showed no ischemic lesions. Antiarrhythmic treatment with amiodarone was initiated, with no further episodes of sustained VT during hospitalization. The patient was referred to the rehabilitation department, with the possible ablation in stand-by. He was discharged home with no neurologic deficit. Three months later the patient experienced heart failure exacerbation and severe pneumonia and died in a local hospital due to sepsis and multiorgan failure.

Our experience proves that emergency mechanical thrombectomy in such a setting is feasible. It may be treated as a bailout option in patients experiencing thromboembolic complications during ablation procedures of ventricular arrhythmias, as in our patient, or other interventions [2–4]. Importantly, arterial access may be preserved during patient's transfer for easy vascular access to mechanical thrombectomy. Pre-set logistic workflow that shortens the time to cerebral reperfusion, should be prepared in advance. Multi-specialty collaboration is fundamental in optimizing stroke thrombectomy pathways and outcomes [5].

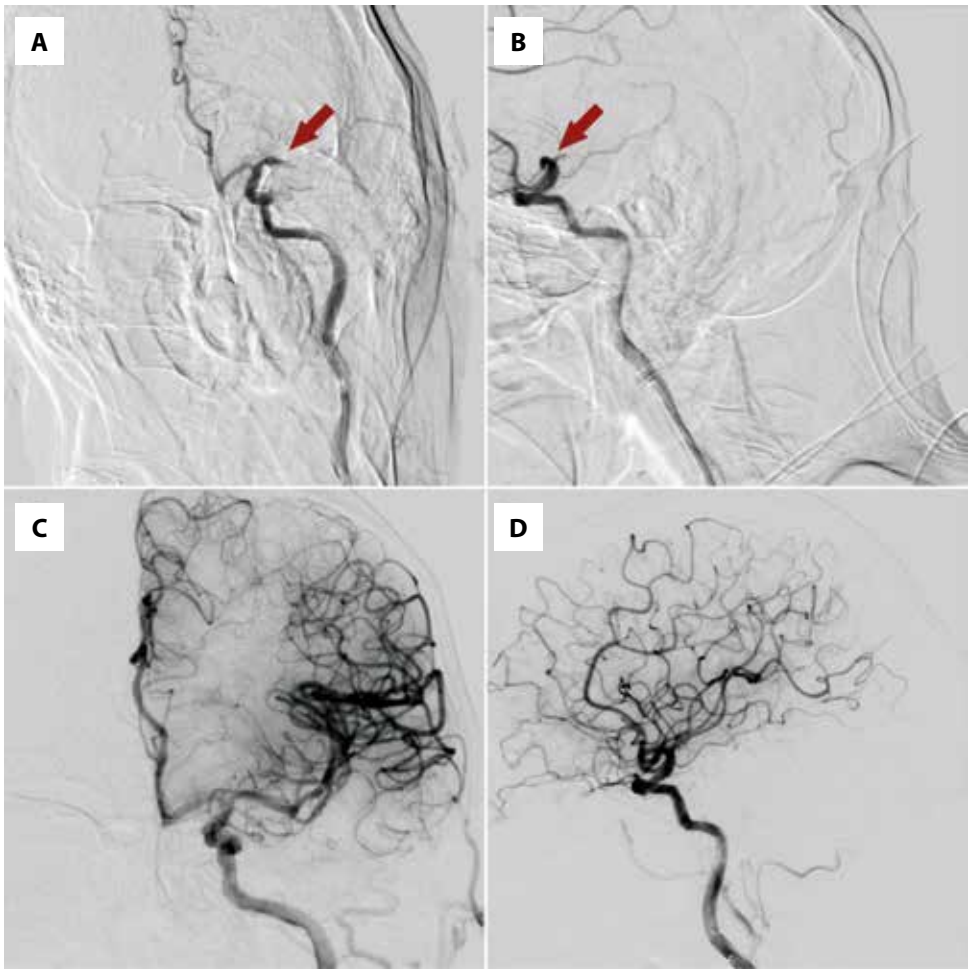


**Figure 1.** Angiographic scans of the cerebral flow. **A.** Initial postero-anterior view, no contrast is passing to the left middle cerebral artery. **B.** Initial lateral view, no contrast is passing to the left middle cerebral artery. **C.** Final postero-anterior view, complete reperfusion of the left middle cerebral artery. **D.** Final lateral view, complete reperfusion of the left middle cerebral artery. Arrows on panels indicate the site of occlusion

## *Article information*

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