

# Mechanical thrombectomy for acute ischemic stroke after implantation of the CoreValve Evolut R in a degenerative bioprosthetic surgical valve

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A 67-year-old man with a reduced left ventricular ejection fraction (25%) was diagnosed with a severe degeneration of the St. Jude Medical (SJM) Epic 25-mm bioprosthesis (St. Paul, Minnesota, United States), which was implanted 3 years earlier with a concomitant coronary artery bypass grafting (the left internal mammary artery to the left anterior descending artery).

Due to the history of infective endocarditis and a significant progression of aortic bioprosthesis degeneration, a leukocyte-labeled scintigraphy was performed, excluding an active form of infective endocarditis. Transesophageal echocardiography (TEE) revealed the maximum and mean transvalvular gradients of 70 mm Hg and 40 mm Hg. TEE excluded the presence of thrombi on the surgically implanted valve. The patient's European System for Cardiac Operative Risk Evaluation II (EuroSCORE II) score was 22.31%. The Heart Team decided to implant an aortic valve by means of the valve-in-valve transcatheter aortic valve implantation method (ViV-TAVI), which was performed under general anesthesia using mechanical ventilation.<sup>1</sup> Angiography of the aortic arch and its branches revealed massive atherosclerotic plaques, which prevented applying the Sentinel Cerebral Protection System (Boston Scientific, Marlborough, United States). The CoreValve Evolute R 29 mm valve (Medtronic, Minneapolis, United States) was deployed under fluoroscopic control with no complications.

Control angiography and TEE confirmed the correct position of the valve (FIGURE 1A).

After waking, the patient showed symptoms of a left-hemispheric stroke: right-sided hemiparesis and aphasia. His National Institutes of Health Stroke Scale score was 18. The team performing ViV-TAVI carried out a cerebrovascular angiography, which revealed a new occlusion of the left middle cerebral artery at the distal M1 segment (FIGURE 1B). Mechanical thrombectomy was performed by the same team using the Solombra technique, which involved a stent-retriever system with a concomitant aspiration through ACE 68 and a 3MAX reperfusion system (Penumbra Inc., Alameda, California, United States). Control angiography revealed a recanalization in the M1 and M2 with residual stenosis and Thrombolysis in Cerebral Infarction marked as grade 2b distal flow (FIGURE 1C). After thrombectomy the patient's condition improved. The National Institutes of Health Stroke Scale score was reduced from 18 to 8 at discharge. Non-contrast head computed tomography 24 hours after thrombectomy showed a diffused, hypodense zone of the left temporal lobe, insula, and the left lateral sulcus (FIGURE 1D). The Alberta Stroke Program Early CT Score value was 6. During hospitalization, the right-sided paralysis was significantly reduced. Three months later his modified Rankin Scale score was 2. Additionally, significant clinical and echocardiographic

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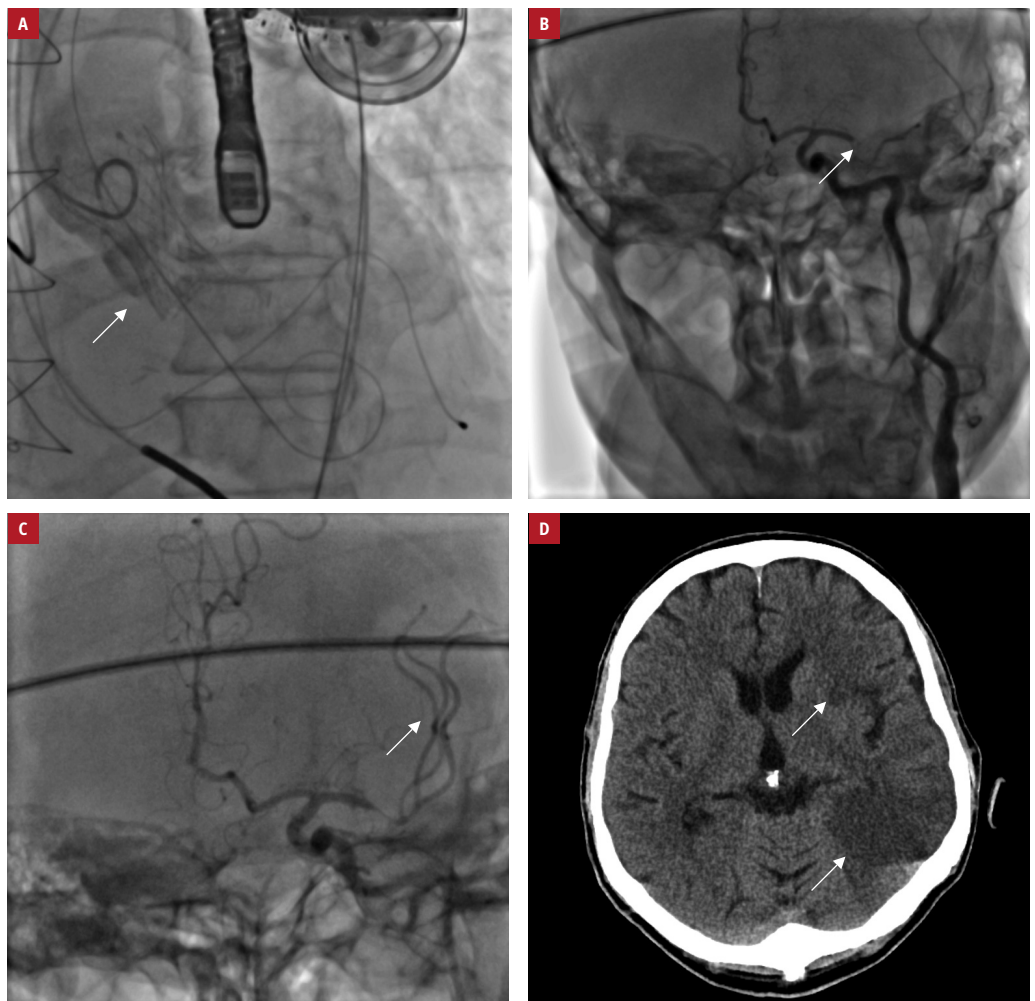
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**FIGURE 1** **A** – angiography showing the implanted CoreValve Evolute R in the degenerated St. Jude Medical Epic 25-mm bioprosthesis (arrow); **B** – angiography of the left internal carotid artery with the middle cerebral artery M1 distal segment occlusion (arrow); **C** – control angiogram with revascularization after thrombectomy (thrombolysis in cerebral infarction marked as grade 2b (arrow)); **D** – noncontrast computed tomography after 24 hours showing hypodensity in the left middle cerebral artery territory (arrows)

improvements were observed (heart failure improvement to New York Heart Association class II, increase of left ventricular ejection fraction from 25% to 35%, peak transvalvular gradient of 30 mm Hg).

The ViV-TAVI of failed bioprosthetic heart valves is an alternative therapeutic option for patients at high risk of surgical reoperation.<sup>2,3</sup> Cerebral embolization can occur at any stage of TAVI procedures, but especially during valve positioning and implantation. Cerebral embolic protection is associated with a significantly lower rate of periprocedural stroke compared with unprotected procedures.<sup>4</sup> Nevertheless, if cerebral embolization should occur, mechanical thrombectomy is the most effective therapeutic option for patients with acute thromboembolic proximal artery occlusions.<sup>5</sup> The team performing TAVI was also adept at thrombectomy, which was carried out without delay. Consequently, a large area of ischemic penumbra volume was rescued, which improved the clinical outcome.

## ARTICLE INFORMATION

**CONFLICT OF INTEREST** None declared.

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