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IMAGES IN INTERVENTION

Single Transseptal Puncture for Left Atrial Appendage Closure and Mitral Valvuloplasty With Total Cerebrovascular Protection in a Patient With Acute Embolic Cerebral Ischemia

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A 69-year-old patient with dyspnea and sudden onset of right hemiplegia and dysarthria was admitted to our institution and rapidly underwent successful mechanical thrombectomy because of a basilar artery occlusion. A good functional outcome was achieved.

FIGURE 1 Total Cerebrovascular Protection

From a right radial artery access, a Sentinel cerebral protection system was advanced toward the aortic arch. The proximal embolic filter was deployed in the brachiocephalic artery to prevent any debris from reaching the right carotid artery and the right vertebral artery, and the distal embolic filter was deployed in the left carotid artery. A second Sentinel system was then advanced from left transradial access to the ascending aorta and its proximal embolic filter deployed in the left subclavian artery to prevent any debris from reaching the left vertebral artery.

The diagnostic work-up revealed rapid-ventricular rate atrial fibrillation and severe mitral valve stenosis, left atrial spontaneous echocardiographic contrast, and a small thrombus formation in the apex of a chicken-wing-morphology left atrial appendage (LAA). Both CHA_2DS_2-VASc and HAS-BLED scores were 4. Because of contraindication to oral anticoagulation, a decision was made to undertake percutaneous LAA closure and combined balloon mitral valvuloplasty with total cerebrovascular protection.

From both transradial access points, 2 Sentinel (Claret Medical, Santa Rosa, California) cerebral protection systems were advanced toward the aortic arch with their embolic filters delivered to all 3 supra-aortic vessels (Figure 1). The right femoral artery was also cannulated for aortography and invasive blood pressure monitoring. Following right femoral vein access and spontaneous breathing sedation, transesophageal echocardiography-guided transseptal puncture was performed at a midposterior site (Figure 2).

After imaging and measurement of the LAA, a 32/36-mm LAmbre (Lifetech Scientific, Shenzhen, China) LAA occlusion system was implanted (Figure 3). Thereafter, balloon mitral valvuloplasty was performed with an Inoue (Toray Medical, Tokyo, Japan) 26 balloon advanced through the same transseptal access, restoring a valve area of 2.5 cm^2 after 3 consecutive dilatations (Figure 4).

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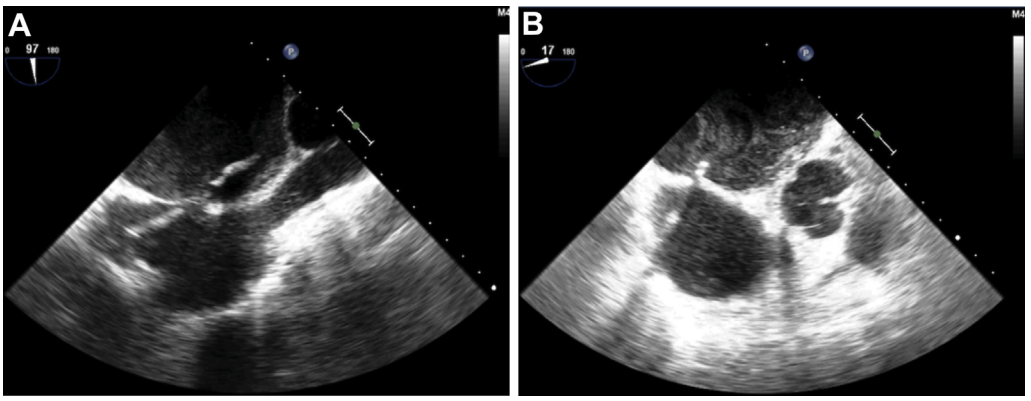
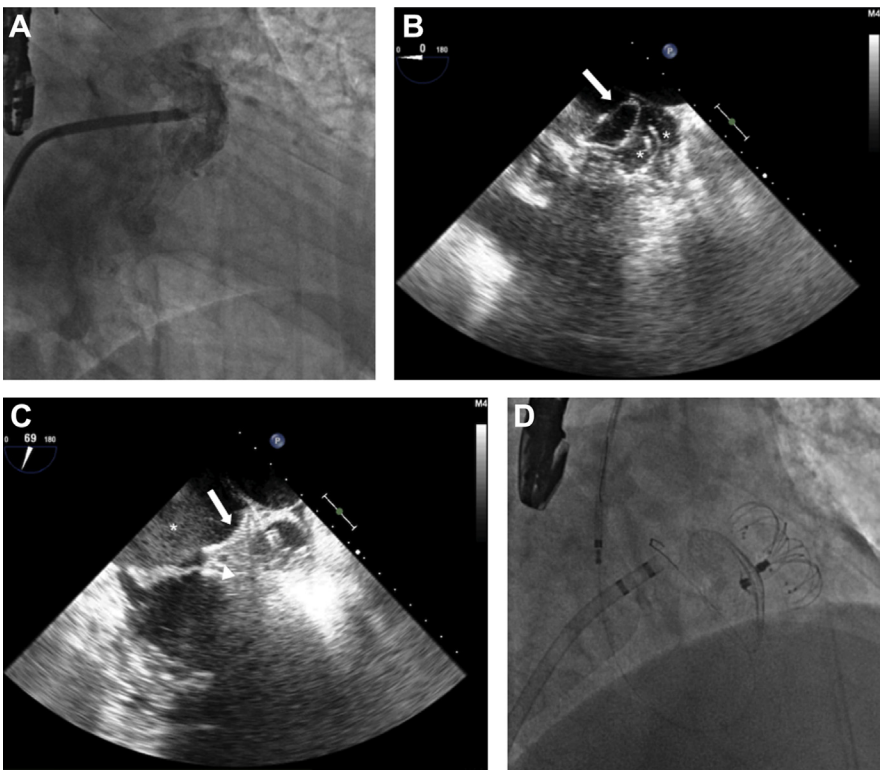
FIGURE 2 Transesophageal Echocardiography-Guided Transseptal Puncture



(A) Bicaval view showing the transseptal sheath crossing the interatrial septum centrally. **(B)** Short-axis view showing the transseptal sheath crossing the interatrial septum posteriorly.

FIGURE 3 Percutaneous Left Atrial Appendage Closure



(A) Left atrial appendage angiography: a 32/36-mm LAmbre left atrial appendage occlusion system's umbrella was deployed to check proper positioning. **(B)** Transesophageal echocardiographic control of device stability (tug test) showing the anchoring hooks of the umbrella **(asterisks)** and the cover under tension **(arrow)**. **(C)** Final transesophageal echocardiography confirming optimal deployment and positioning of the system's cover **(arrow)** and left circumflex coronary artery patency **(arrowhead)**; significant spontaneous echocardiographic contrast is clearly visible in the left atrium **(asterisk)**. **(D)** Final fluoroscopic check revealing a properly positioned system with well-deployed cover and aligned umbrella anchoring hooks.