A 60-year-old man was referred to our center for the evaluation of sudden-onset right-side weakness and aphasia. Three months earlier, he underwent mitral valve replacement for mitral stenosis elsewhere. Transthoracic echocardiography showed a well-functioning bioprosthetic mitral valve along with a 35 × 32-mm, round, free-floating ball thrombus, which intermittently caused a transient obstruction of the valvular orifice; then the valve leaflets snapped it away like a pinball game (A to H, Online Videos 1 and 2). The brain magnetic resonance imaging and thoracoabdominal computed tomography angiography showed embolic infarctions in the brain and spleen (I and J). Surgery was delayed due to the potential risk of cerebral complications that might occur during cardiac surgery in the setting of acute stroke with a hemorrhagic transformation. On the 14th hospital day, a follow-up transthoracic echocardiography revealed the complete disappearance of the ball thrombus (K and L, Online Videos 3 and 4). The patient demonstrated no symptoms or signs suggesting a new embolic event.