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Percutaneous Aspiration Thrombectomy of Thrombus Attached to Left Atrial Surface of a Watchman FLX Device



Tiberio M. Frisoli, MD,^{a,*} Michael Chiang, MBBS, MD,^{a,*} Marvin H. Eng, MD,^b Pedro E. Gonzalez, MD,^a Trevor Szymanski, MD,^c Pedro A. Villablanca, MD,^a Brian O'Neill, MD,^a James C. Lee, MD,^a Dee Dee Wang, MD,^a William W. O'Neill, MD^a

A 77-year-old man with a history of frequent falls, subdural hemorrhage, and atrial fibrillation; with CHA₂DS₂-VASc score of 4; and with no history of prothrombotic state underwent uncomplicated left atrial appendage (LAA) closure with a 31-mm Watchman FLX (Boston Scientific). He was discharged on rivaroxaban. On surveillance transesophageal echocardiography (TEE) 45 days later, a 1.3 × 2.2-mm thrombus was found adherent to the left atrial surface of the Watchman FLX device (Figure 1A, Video 1A). The patient endorsed that he may have missed the most recent 7 days of rivaroxaban. After multidisciplinary discussion of treatment options, the patient was offered anticoagulation therapy vs off-label percutaneous aspiration thrombectomy and anticoagulation; he preferred thrombectomy.

General anesthesia and TEE guidance were chosen for the procedure. Bilateral femoral venous access was used for the AngioVac (AngioDynamics) circuit. Sentinel cerebral embolic protection (Boston Scientific) was utilized. After interatrial septal puncture, balloon-assisted tracking with a 10 × 40-mm Armada balloon allowed safe passage of the AngioVac cannula into the left atrium (Video 1B). Minimal residual thrombus was noted after 10 minutes of aspiration

thrombectomy at roughly 4 L/min (Figure 1B, Videos 1C and 1D).

Histopathology (Figure 1C) confirmed thrombus. The patient was discharged on postoperative day 2 on warfarin, without complications. Follow-up TEE at 1 month (Figure 1D, Videos 1E and 1F) showed no thrombus on the Watchman FLX device.

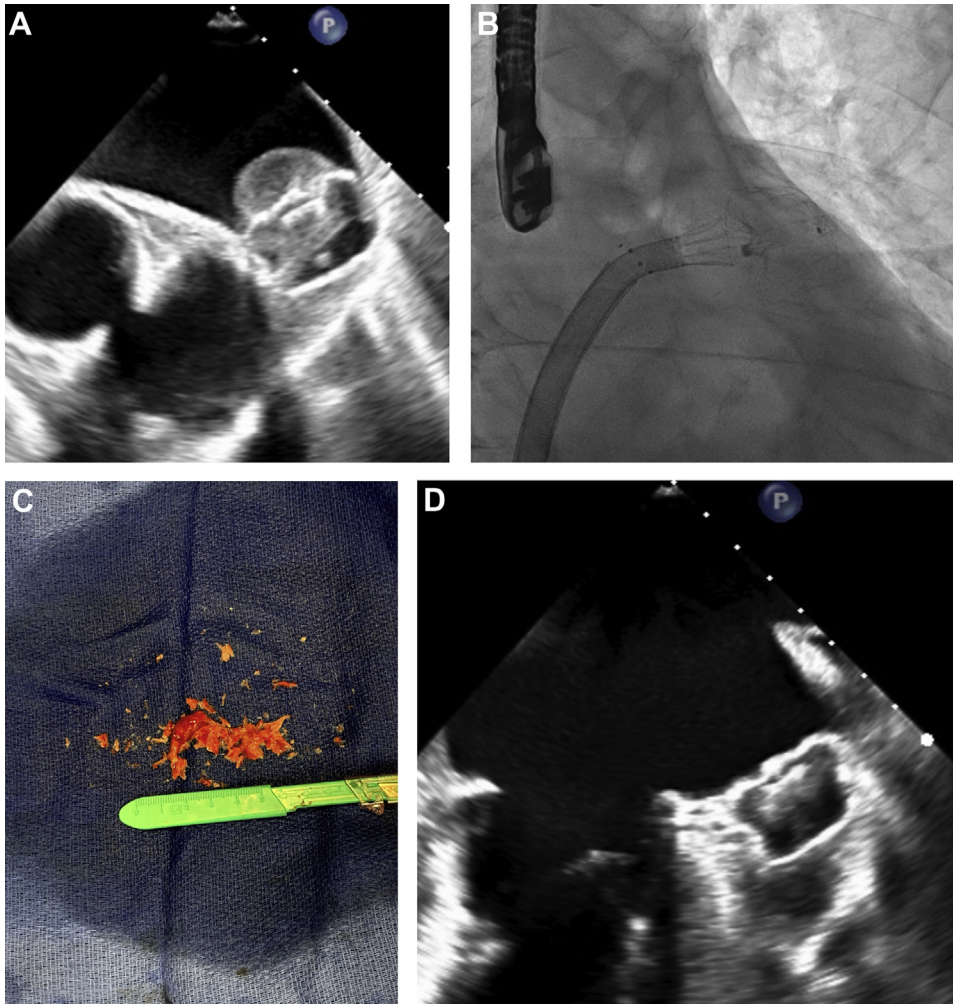
This case illustrates a large thrombus adherent to the Watchman FLX and the importance of anticoagulation postimplant; whether the thrombus would have formed in the face of adequate anticoagulation is unknown. Device-related thrombus (DRT) after Watchman is seen in ~3.7% of patients after LAA closure and portends a stroke-or-systemic-embolism event rate of 6.28 events/100 patient-years (relative risk of 3.55 compared with those without DRT).¹ A recent study of Watchman FLX revealed a 1.8% DRT rate at 2 years in patients for whom 45 days of postimplant novel oral anticoagulants plus aspirin was mandated.² Aspiration thrombectomy with AngioVac in the arterial circulation³ or left atrial appendage⁴ has been described; to our knowledge, this is the first report for thrombus on an LAA closure device. The relatively large size of the thrombus, and our group's experience with AngioVac in the left heart, led us to offer AngioVac for this

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The authors attest they are in compliance with human studies committees and animal welfare regulations of the authors' institutions and Food and Drug Administration guidelines, including patient consent where appropriate. For more information, visit the [Author Center](#).

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FIGURE 1 Mass Adherent to a Watchman FLX Device as Seen on Routine Post-LAA Closure Transesophageal Echocardiogram, Aspirated Percutaneously With AngioVac, and Confirmed to be Thrombus



(A) Thrombus on Watchman FLX on surveillance transesophageal echocardiography (TEE). **(B)** Fluoroscopic image of AngioVac aspiration thrombectomy. **(C)** Appearance of thrombus after evacuation from body. **(D)** Postoperative 1-month TEE. Repeat TEE 1 month later, with patient on Coumadin, showed no recurrence of left atrial thrombus. LAA = left atrial appendage.

patient. Medical therapy alone may have resolved the thrombus. There is no data at this time to support routine use of aspiration thrombectomy over medical therapy with anticoagulation for thrombus in the left atrium.

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Dr Frisoli has served as a proctor for Edwards Lifesciences, Boston Scientific, Abbott, and Medtronic. Dr B. O'Neill has served as a consultant for and received research grant from Edwards Lifesciences. Dr Lee is a consultant for HeartFlow. Dr Villablanca is a consultant for


Edwards Lifesciences and Teleflex. Dr Wang has served as a consultant to Edwards Lifesciences, Boston Scientific, and Materialize; and has received research grant support from Boston Scientific. Dr Eng has served as clinical proctor for Edwards Lifesciences. Dr W.W. O'Neill has served as a consultant to Abiomed, Medtronic, and Boston Scientific.

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KEY WORDS AngioVac, aspiration thrombectomy, cerebral embolic protection, left atrial appendage closure, left atrial thrombus, Watchman FLX

 **APPENDIX** For supplemental videos, please see the online version of this paper.