Watchman FLX Migration Due to Endothelialization Failure: Surgical Extraction and Maze Procedure

Oluwakorede Akele, MD[1], Eduardo Dan Itaya, MD[1], Mikhail De Jesus, DO[2], Jawad Haider, MD, FACC, RPVI[2], Robert Hagberg, MD[2], Vincent Lipari, DO[2], Paras Satish Bhatt, MD[2]

1. Department of Internal Medicine, University of Connecticut Health Center, Farmington, CT, USA.
2. Heart and Vascular Institute, Hartford Hospital, Hartford, CT, USA

History

- 75-year-old woman with **severe aortic stenosis** status post **transcatheter aortic valve replacement** with a 23-mm Sapien 3 valve in 2022.
- Other comorbidities: obstructive sleep apnea, COPD, hypertension, hyperlipidemia, type 2 diabetes, rheumatoid arthritis on methotrexate, gout, fibromyalgia, and **chronic iron-deficiency anemia requiring transfusions**.
- She had recurrent **atrial flutter and atrial fibrillation**, treated with apixaban, electrical cardioversion, and later ablation.
- Despite appropriate rhythm and anticoagulation management, she experienced repeated anemia, epistaxis, and frequent mechanical falls.Given her **CHA_2DS_2-VASc of 4** and **inability to tolerate long-term anticoagulation**, she was referred for **left atrial appendage occlusion.**

Presentation

- She underwent **percutaneous implantation of a 27-mm Watchman FLX device** under TEE and fluoroscopic guidance via right femoral access. The deployment was technically successful, though the device appeared **slightly proximally seated** after release.
- Compression and stability testing were acceptable, and she was discharged on **aspirin and clopidogrel**, continuing **metoprolol 100 mg daily**.
- **Seven weeks later**, routine TEE revealed **proximal migration of the device**, partial occlusion of the appendage, and a **peri-device leak** with a small left-to-right shunt across an iatrogenic PFO (Figure 1).

Investigation

- **CTA chest** confirmed device apposition but demonstrated **extensive intradevice contrast**, indicating **failed neo-endothelialization** (Figure 2). This raised concern for endothelialization failure instead of mechanical displacement.
- A multidisciplinary discussion between electrophysiology, cardiothoracic surgery, and interventional cardiology teams determined that **percutaneous retrieval** posed a **high risk** of device fracture or atrial perforation.
- Given the patient's prior TAVR and frailty, careful surgical planning was undertaken.

Management

- **Multidisciplinary review was conducted with Boston Scientific.**
- **Median sternotomy** was performed with cardiopulmonary bypass and aortic cross-clamp. A **Maze procedure** was performed using **Medtronic irrigated bipolar radiofrequency lesions**, reinforced with cryoablation.
- The **Watchman FLX device was removed intact** without atrial wall perforation (Figure 3).
- The **left atrial appendage was clipped** with a **35-mm AtriCure device**, followed by additional cryoablation to the coronary sinus. The patient was rewarmed, weaned from bypass, and transferred to the ICU in sinus rhythm and stable condition.

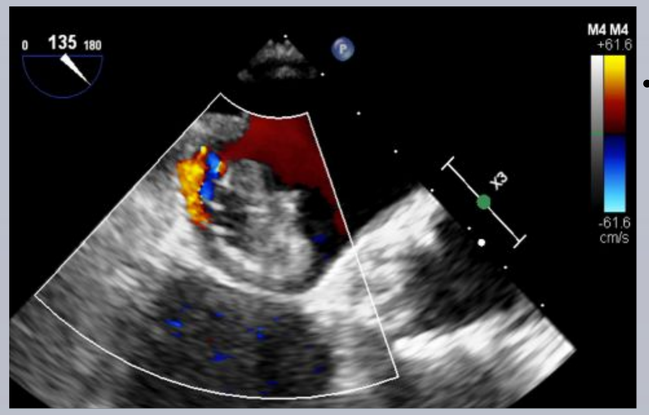

Figure 1: Follow-up TEE at 7 weeks post-implantation demonstrating proximal dislodgement of the Watchman FLX device, with partial occlusion of the left atrial appendage and evidence of peri-device leak.

Figure 2: CTA displaying stable device apposition and absence of a true peri-device leak but revealed extensive intradevice contrast persistence, consistent with incomplete neo-endothelialization.

References

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Outcome and Follow-up

- She briefly required **midodrine and fludrocortisone** for orthostatic hypotension. **Amiodarone** was restarted once rhythm stabilized. **Anticoagulation was withheld** due to recurrent falls. She was discharged to rehabilitation on **postoperative day seven**.
- At follow-up, she remained in **sinus rhythm**, reporting only mild exertional dyspnea. Ongoing outpatient surveillance includes rhythm monitoring and echocardiographic assessment for left atrial appendage closure integrity. The patient continues in stable sinus rhythm without recurrent embolic or arrhythmic events several months post-surgery.

Discussion

- The **Watchman device** is a small mesh implant placed in the **left atrial appendage to prevent clot formation** and reduce stroke risk in patients with atrial fibrillation who cannot take long-term anticoagulation, though **device migration or embolization is a rare but serious complication**, occurring in fewer than 0.1% of cases.
- The **NCDR LAAO Registry** of over 120,000 procedures reported a **14% in-hospital mortality** associated with device migration, increasing to over 20% in those requiring surgery.[1]
- The **Watchman FLX** device depends on early **neo-endothelialization** to secure the device and seal the appendage. However, studies have shown incomplete endothelialization in **60–70% of patients at 6 weeks**, persisting in up to two-thirds at 6 months despite apparent imaging success.[2,3]
- These failures may be related to complex **LAA anatomy, device sizing**, or patient-specific healing variability. Our case illustrates that even with technically correct implantation, **biologic failure of endothelial coverage** can lead to migration.
- Multimodality imaging with TEE and CT confirmed contrast pooling within the device consistent with poor endothelialization, and because percutaneous retrieval carried a high risk of device fracture, **surgical removal was chosen as the safer and more definitive option.**

Conclusion

- **Watchman FLX migration due to failed endothelialization is rare but important**, as even correctly sized devices can migrate when endothelial coverage is incomplete.
- **Early multimodality imaging and multidisciplinary evaluation** are essential to detect migration and determine whether percutaneous or surgical retrieval is safest.
- **Surgical extraction with Maze and LAA clipping** provides definitive treatment, rhythm stabilization, and durable stroke prevention, underscoring the need for continued reporting to refine device design and post-implant care.