

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

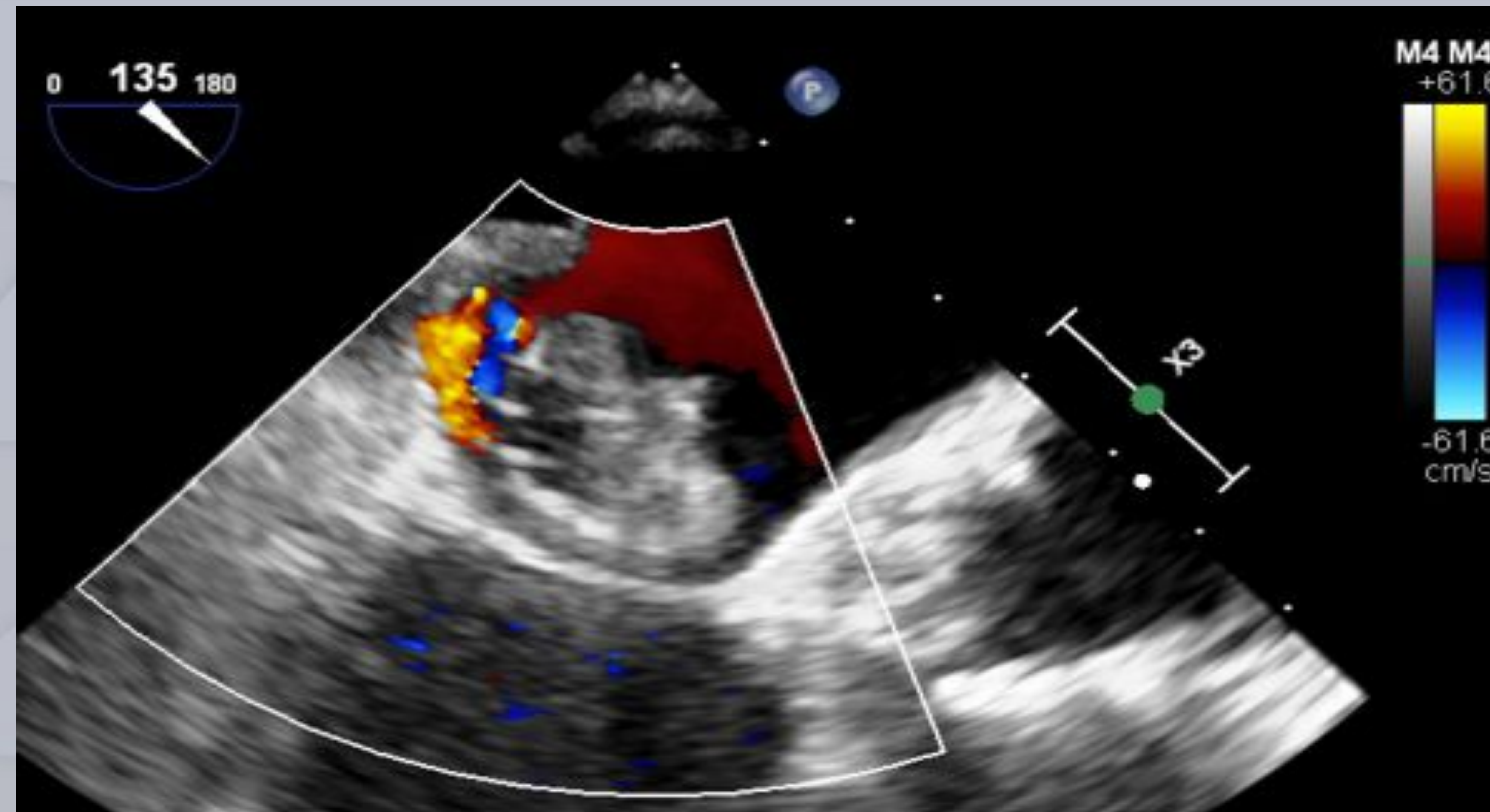


Figure 1: Follow-up TEE at 7 weeks post-implantation demonstrating proximal dislodgement of the Watchman FLX device, with partial occlusion of the left atrial appendage and evidence of peri-device leak.



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.

History

- 75-year-old woman with 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 **CHA₂DS₂-VASc of 4** and **inability to tolerate long-term anticoagulation**, she was referred for **left atrial appendage occlusion**.
- 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.
- **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).
- **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.

Management

- **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.
- 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.

Outcome and Follow-up

- She briefly required midodrine and fludrocortisone for orthostatic hypotension, with amiodarone restarted once rhythm stabilized and anticoagulation withheld due to recurrent falls, and was discharged remained in sinus rhythm with only mild exertional dyspnea and sustained left atrial appendage closure without recurrent embolic or arrhythmic events on ongoing outpatient surveillance 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.

Conclusion

- Watchman FLX migration from **incomplete endothelialization**, though rare, can occur even with correctly sized devices.
- Surgical extraction with **concurrent Maze and LAA clipping** provides definitive treatment, rhythm stabilization, and durable stroke prevention, highlighting the need for continued reporting to refine device design and post-implant care.

References

1. Friedman DJ, Freeman JV, Zimmerman S, et al. Watchman device migration and embolization: A report from the NCDR LAAO Registry. *J Cardiovasc Electrophysiol.* 2023;34(5):1192-1195. doi:10.1111/jce.15909
2. Sivasambu B, Arbab-Zadeh A, Hays A, Calkins H, Berger RD. Delayed endothelialization of watchman device identified with cardiac CT. *J Cardiovasc Electrophysiol.* 2019;30(8):1319-1324. doi:10.1111/jce.14053
3. Zhu J, Wang Y, Li M, Huang D, Li S, Li J. Clinical incidence and relevance of incomplete endothelialization in atrial fibrillation patients with Left Atrial Appendage Closure. *BMC Cardiovasc Disord.* 2024;24(1):439. doi:10.1186/s12872-024-04113-5