



SPOTLIGHT

Percutaneous left atrial appendage occlusion pushing down pedunculated thrombus

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Percutaneous left atrial appendage occlusion (LAAO) was chosen as the only viable approach in a 82-year-old man with permanent atrial fibrillation (AF), chronic systolic heart failure, advanced chronic kidney disease (eGFR \leq 30ml/min), and extensive intestinal vascular malformation not susceptible of treatment. The CHA₂DS₂-VASc and HAS-BLED scores were 6 and 4, respectively. Stroke prevention by warfarin was previously discontinued due to recurrent life-threatening gastrointestinal bleeding and a history of labile International Normalized Ratio (INR).

3D full-volume pre-procedural Transesophageal Echocardiography (TEE) revealed the presence of dense sludge and an intracavitary thrombus in a “cactus” shaped LAA. It measured about 2 × 9 mm, appearing pedunculated and intermittently prolapsing into the LAA cavity (Figure 1). Given the high-risk profile, we chose to perform LAAO despite the presence of the thrombus. We planned no-touch transcatheter LAA closure and a supra-aortic trunk protection system in order to minimize interventions within the LAA and avoid risk of peri-procedural stroke. Through the right femoral artery, a transcatheter cerebral protection (TCEP) (*TriGUARD 3*, *Keystone Heart*) was positioned at the aortic arch. Intracardiac Echocardiography (ICE) guided transeptal puncture and LAAO. The ICE catheter (*Acuson AcuNav, J&J*) was advanced in the right atrium (RA) and confirmed the presence of the thrombus. The patient was anticoagulated by heparin to maintain an activated clotting time >250s. Measurements were based on pre-procedural TEE and contrast injection with pigtail catheter was not performed, in order to avoid any potential contact with the material inside the LAA cavity.

A 24mm Watchman FLX (*Boston Scientific*) device was unsheathed to obtain a ball conformation of its closed distal end and was advanced into the LAA ostium in a “single shot” manner thanks to its self-expanding property, without any direct catheter manipulation inside the LAA (Figure 2). After demonstrating the appropriate position into the LAA, the device was cautiously advanced and successfully deployed using its ball shaped to ease the occlusion of the LAA and push down the thrombus in the cavity (Figure 3). Device stability was checked by the tug test. At the end of the procedure, the TCEP was successfully retrieved showing no debris on visual evaluation (Figure 4). No peri-procedural complications occurred and the patient, due to his high bleeding risk, was discharged with aspirin therapy only. At 45-day TEE, the occluded LAA cavity appeared fully thrombosed with complete homogenous echo density inside the implanted device. No thrombosis on the left atrial face of the device nor peri-device leaks were recorded.

Percutaneous LAAO has proven to be an effective alternative to oral anticoagulation (OAC) for stroke prevention in AF patients even when complicated by major comorbidities. The very high-risk profile of our patient due to complex chronic diseases, including severe CKD with low eGFR and vascular malformation, refrained us from using DOAC in replacement of warfarin. In addition, it has been reported that some patients may suffer of LAA thrombosis despite continuous OAC. Previous studies reported the presence of thrombus in the LAA with different prevalence ranging from 2.3 to 10.6% despite optimal OAC, depending on type and duration of OAC, type of AF, echocardiographic parameters, and concomitant

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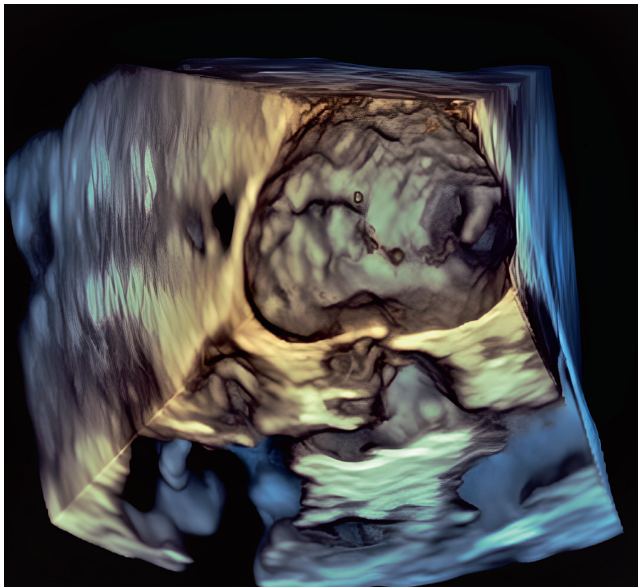


FIGURE 1 3D full-volume pre-procedural TEE for the LAA rotated into an en face view to show the LAA intracavitary-pedunculated thrombus

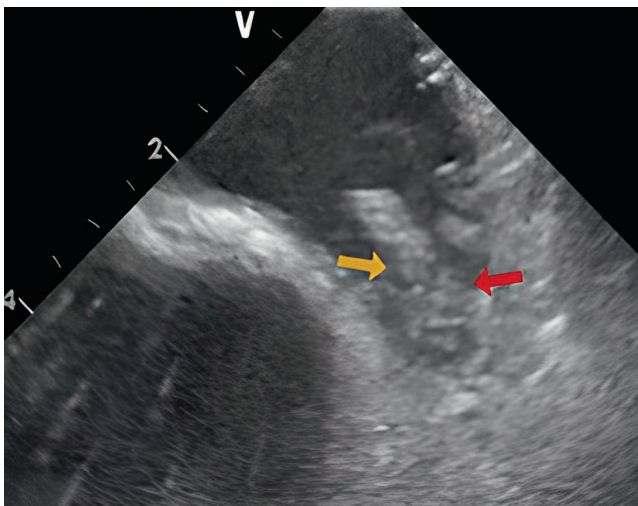


FIGURE 2 ICE view right atrium from coronary sinus for the LAA: advancement of the ball-shaped closed distal end of the Watchman FLX before release (yellow arrow) and the thrombus inside the LAA (red arrow)

diseases. Although LAAO has been shown to be effective and safe, peri-procedural stroke remains a rare but devastating adverse event, described in 1% of patients undergoing this procedure. According to applicable Guidelines, the presence of LAA thrombosis is generally considered an absolute contraindication to LAAO due to the risk of distal embolization. Consequently, the management of selected patients deemed at high risk of both thromboembolism and bleeding, may become challenging.

We present a clinical case documenting the feasibility and safety of percutaneous LAAO using Watchman FLX device ICE-guided

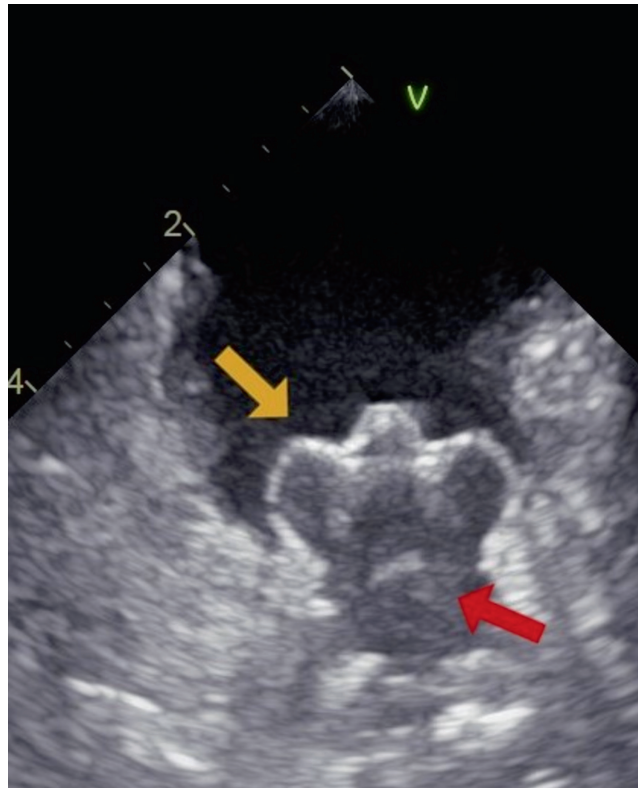


FIGURE 3 ICE view via transeptal access from the left pulmonary vein for the LAA: final Watchman FLX deployment (yellow arrow) with remaining thrombus in the distal LAA (red arrow)

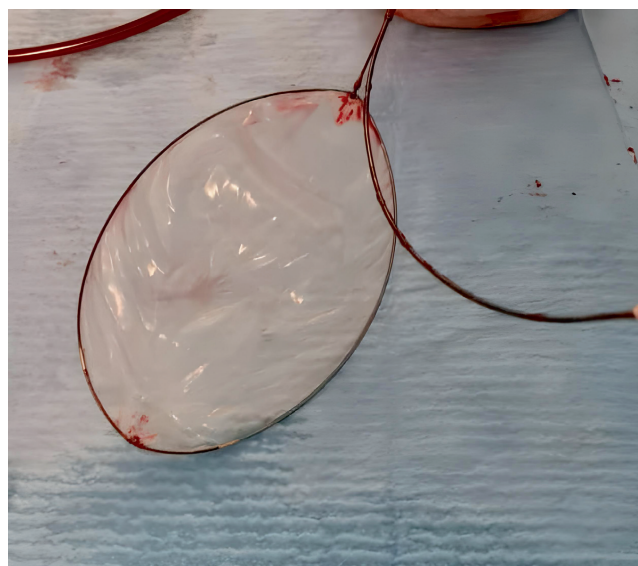


FIGURE 4 TriGUARD 3 cerebral protection device at the end of the procedure with no coagulative debris

in the presence of an appendage-pedunculated thrombus. The Watchman FLX device has a reduced length and closed distal self-expanding nitinol loops to allow safe navigation of the partially deployed device in the LAA. As shown in our experience, its ball shape

allows the deployment with ad advancement technique without manipulating the catheter inside the LAA.

Using new approaches and a considerable degree of expertise, new Watchman device procedure in combination with off-label use of TCEP during percutaneous LAAO may be considered the best option to safely manage patients at very high embolic and bleeding risk with persistent LAA thrombosis.

DISCLOSURE STATEMENT

All the authors report no conflicts of interest.

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How to cite this article: Bucci MG, Nicoli L, Vanoli E, Proietti R, Sagone A. Percutaneous left atrial appendage occlusion pushing down pedunculated thrombus. *J Arrhythmia*. 2022;38:666–668. <https://doi.org/10.1002/joa3.12730>