



CASE REPORT

Efficiency Redefined: TAVR meets LAA Closure in One Sitting

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Abstract

Atrial fibrillation (AF) is common in transcatheter aortic valve replacement (TAVR) patients, increasing stroke and bleeding risk. We report an 88-year-old male with severe aortic stenosis, AF, coronary artery disease (CAD), and Left atrial appendage (LAA) thrombus who underwent a successful combined transcatheter approach. Coronary stenting was followed by a single session of LAA occlusion and TAVR, ensuring effective stroke prevention with minimized bleeding risk and valve replacement with no complications. This case demonstrates the safety and efficacy of a single-session strategy for high-risk patients with complex structural cardiovascular disease.

Keywords: atrial appendage closure, TAVR, dual procedure, LAA closure

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Introduction

Atrial fibrillation is the most common arrhythmia in the transcatheter aortic valve replacement (TAVR) population and is associated with a worse prognosis, mostly due to increased risk of stroke and bleeding. Presence of associated comorbidities such as coronary artery disease, ischemic stroke or bleeding further complicate the management of such patients. TAVR combined with concomitant structural procedures is technically feasible and has been shown as a safe alternative in selected patients^{1,2}. TAVR is shown to be safely combined with left atrial appendage occlusion in a single procedure³.

Case Report

An 88-year-old male patient with a known history of hypertension and atrial fibrillation (AF) was admitted to the cardiology outpatient clinic for symptomatic aortic stenosis. He was on warfarin treatment, with a time in therapeutic range exceeding 70%. One month prior to admission, he had experienced an ischemic stroke while his INR was within therapeutic range. His history was also notable for two episodes of gastrointestinal bleeding. Echocardiography revealed severe aortic stenosis with a valve area of 0.6 cm², and a mean transvalvular gradient of 39 mmHg. Left

ventricular ejection fraction was 55%. For better evaluation of aortic valve, coronary and peripheral arteries; Computed Tomography (CT) with Peripheral and Coronary CT Angiography scans were performed. CT Angiography revealed a significant stenosis in the right coronary artery (RCA) and thrombus in left atrial appendage (LAA) (Fig. 1a). Transesophageal echocardiography confirmed a large thrombus in LAA (Fig. 1b). The patient's INR was 2.4 at the time. Calculated CHA₂DS₂-VA Score was 6 and HAS-BLED Score was 5. Logistic EuroSCORE was 19,67%, and STS Score was 8,793%. The patient's high bleeding risk and previous gastrointestinal bleeding, accompanied with high ischemic risk, previous ischemic stroke and persisting thrombus in LAA despite optimal anticoagulation led to the decision for left atrial appendage closure. Considering the patient's high surgical risk, Heart Team decided on transcatheter treatment options for the patient. First, coronary angiography was performed, which revealed significant stenotic segments in both RCA and circumflex artery (Cx). 3.5x28 mm Everolimus Eluting stent was placed in RCA, followed by 3.0x18 mm Everolimus Eluting stent in Cx artery. The patient was scheduled for a

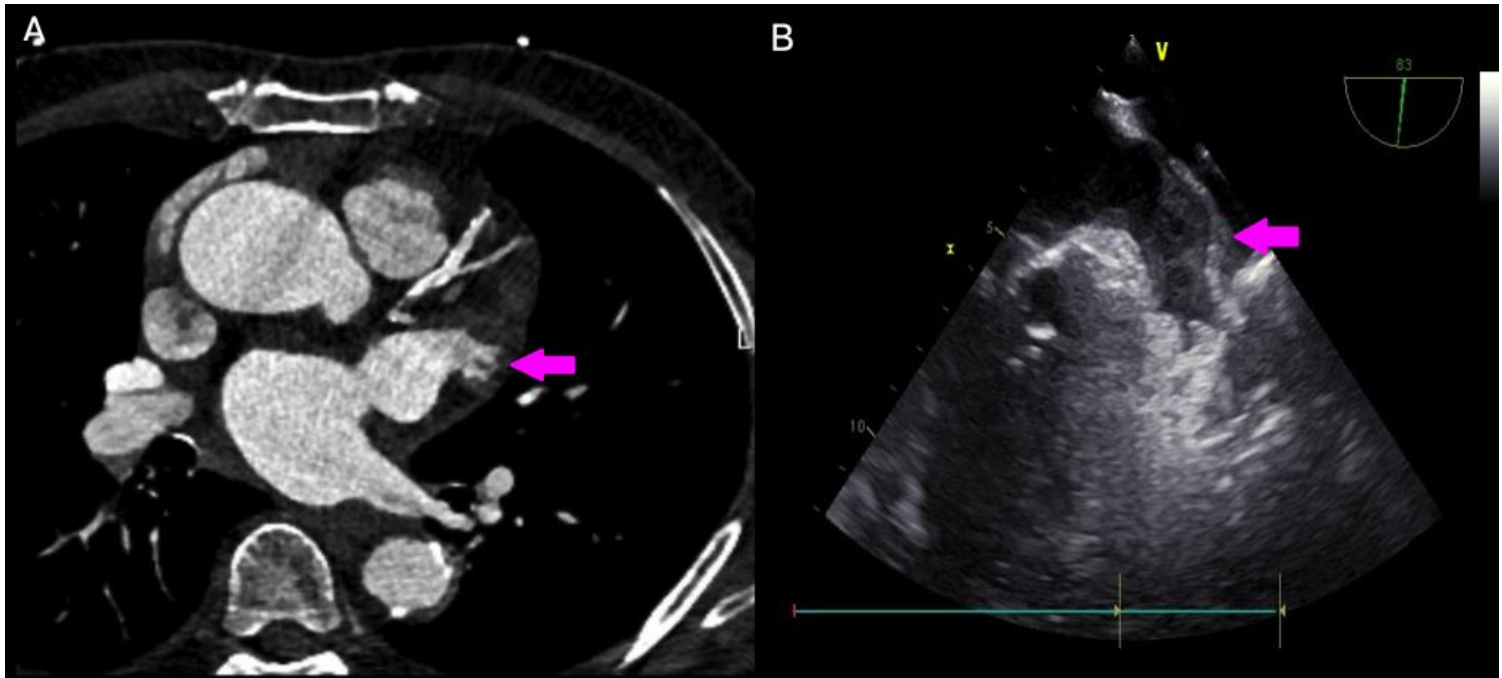


Figure 1. Thrombus in LAA. A; LAA thrombus shown in cardiac CT. B; LAA thrombus shown in TEE. CT; computerized tomography, LAA; left atrial appendage, TEE; transesophageal echocardiography

second session consisting of concomitant LAAO (LAA Occlusion) and TAVR procedures. After placement of Sentinel cerebral protection device to reduce the risk of peri-procedural cerebral embolism, 28 mm Amplatzer™ Amulet™ occlusion device was placed in the LAA. Afterwards, 29 mm Medtronic Evolut R was placed on the aortic position (figure 2). The peak transvalvular gradient was less than 10 mmHg with mild aortic regurgitation after the procedure. The patient was prescribed Acetyl Salicylic Acid (ASA) 100 mg and Clopidogrel 75 mg once daily for six months, then proceeded with ASA 100 mg once daily lifelong. There have been no

complications for 12 months.



Figure 2. Fluoroscopy image of LAA closure and TAVR in the same setting. LAA; left atrial appendage, TAVR; transcatheter aortic valve replacement.

Discussion

A major clinical challenge in high-risk patients as such is how to balance the risk for embolic and bleeding events, and it requires individualized therapeutic strategies. LAAO can be a preferable option for AF patients with high bleeding risk, not only because better stroke prevention than warfarin but also a significant mortality reduction¹. Timing of intervention is also another aspect to consider. Single-session manner can be a more patient-friendly, time-saving and cost-effective option in many cases. WATCH-TAVR trial demonstrated the non-inferiority of concomitant TAVR and LAAO procedures to TAVR and medical therapy⁴. The most important advantage of concomitant TAVR and LAAO is the immediate stroke protection, which is highest especially in the first 24 hours after TAVR¹. Despite the relatively higher amount of contrast medium used in combined procedures, usually this does not have any clinical significance⁵. In our case, the patient had a very high ischemic risk and bleeding risk, and he had already undergone a coronary angiography procedure. Minimizing the number of procedures while ensuring effective protection from ischemic events provided patient comfort with minimal additional complications. Another

issue that should be considered while planning concomitant procedures is the order of the planned procedures. We chose to perform LAAO first, followed by TAVR; in contradiction to previous case reports^{1,3,5}. The main reason behind this decision was that we wanted to avoid performing a transseptal puncture after the administration of heparin.

Conclusion

This case highlights the successful management of a high-risk patient with symptomatic aortic stenosis, coronary artery disease and AF accompanied with LAA thrombus using a combined transcatheter approach. A multidisciplinary strategy, including coronary intervention, TAVR, and LAA occlusion, can be an effective treatment option for complex patients with high surgical risk and multiple comorbidities.

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