Rapid left atrial appendage thrombus formation before suture ligation with LARIAT

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A 74-year-old man with a history of long-lasting persistent atrial fibrillation (AF) on chronic dabigatran treatment (2 × 150 mg/day) was referred for left atrial appendage (LAA) closure following a severe ischemic stroke 2 years before. The patient was at high thromboembolic risk with a CHA_2DS_2-VASc score of 7 points (1 point for congestive heart failure, age, arterial hypertension, diabetes mellitus, peripheral vascular disease and 2 points for the previous stroke) and HAS-BLED of 3 points (1 point for hypertension, stroke and elderly). On admission, 2 days before the planned procedure, ECG showed sinus rhythm. Computed tomography confirmed favorable anatomy for epicardial LAA closure (Figure 1 A). Dabigatran was discontinued 3 days before the procedure, and low-molecular-weight heparin was started (2 × 80 mg/day, the last dose on the day of the procedure).

Before starting anesthesia at 3.57 PM the patient was confirmed with no thrombus in LAA by transesophageal echocardiography (TEE) (Figure 1 B). At that time, the patient started to experience AF. Just before starting the LAA epicardial exclusion at 4:27 PM TEE was repeated. Fresh thrombus formation in LAA was observed (Figure 1 C). At 4:31 PM even more solid thrombus was noted (Figure 1 D). The patient was excluded from LAA closure. A high-dose bolus of unfractionated heparin (10,000 U) was given, followed by infusion of 2000 U/h with a hope to resolve the thrombus by the next day. Next day at 10.30 AM another TEE was performed and partial dilution of the thrombus was confirmed (Figure 1 E). No stroke, transient ischemic attack, or embolism was noted. Due to the high risk of thromboembolic events, the patient was discharged home with low-molecular-weight heparin (2 × 80 mg/day) and dabigatran (2 × 150 mg/day). After 2 months, TEE presented no signs of thrombus in the LAA. The patient underwent uncomplicated closed-chested LAA ligation with the LARIAT suture delivery device (SentreHEART, Inc., Redwood City, CA). Complete LAA closure was confirmed with TEE and contrast fluoroscopy. The patient did well after the procedure and was discharged on aspirin (150 mg/day) without any additional oral anticoagulation treatment. A follow-up TEE performed at 3 months revealed a closed LAA with no leaks. After 3 years, the patient was on no anti-platelet or anti-thrombin medications with no signs of recurrent thromboembolic complications.

The LAA is a source of more than 90% of thrombus in AF and changes in cardiac rhythm from sinus rhythm to AF may particularly increase the risk of thrombus formation in LAA. Oral anticoagulation is recommended as a standard treatment to prevent thromboembolic events in AF patients. However, in patients who are at high risk for thrombus formation, new therapeutic options might be considered. One of them is LAA closure, which has become an alternative treatment for AF patients [1, 2]. One possible option is percutaneous epicardial LAA closure using the LARIAT system, which was shown to be effective in thromboembolism risk reduction, even in high-risk patients [3–5].

This case report describes rapid thrombus formation in LAA despite recommended oral anticoagulant treat-

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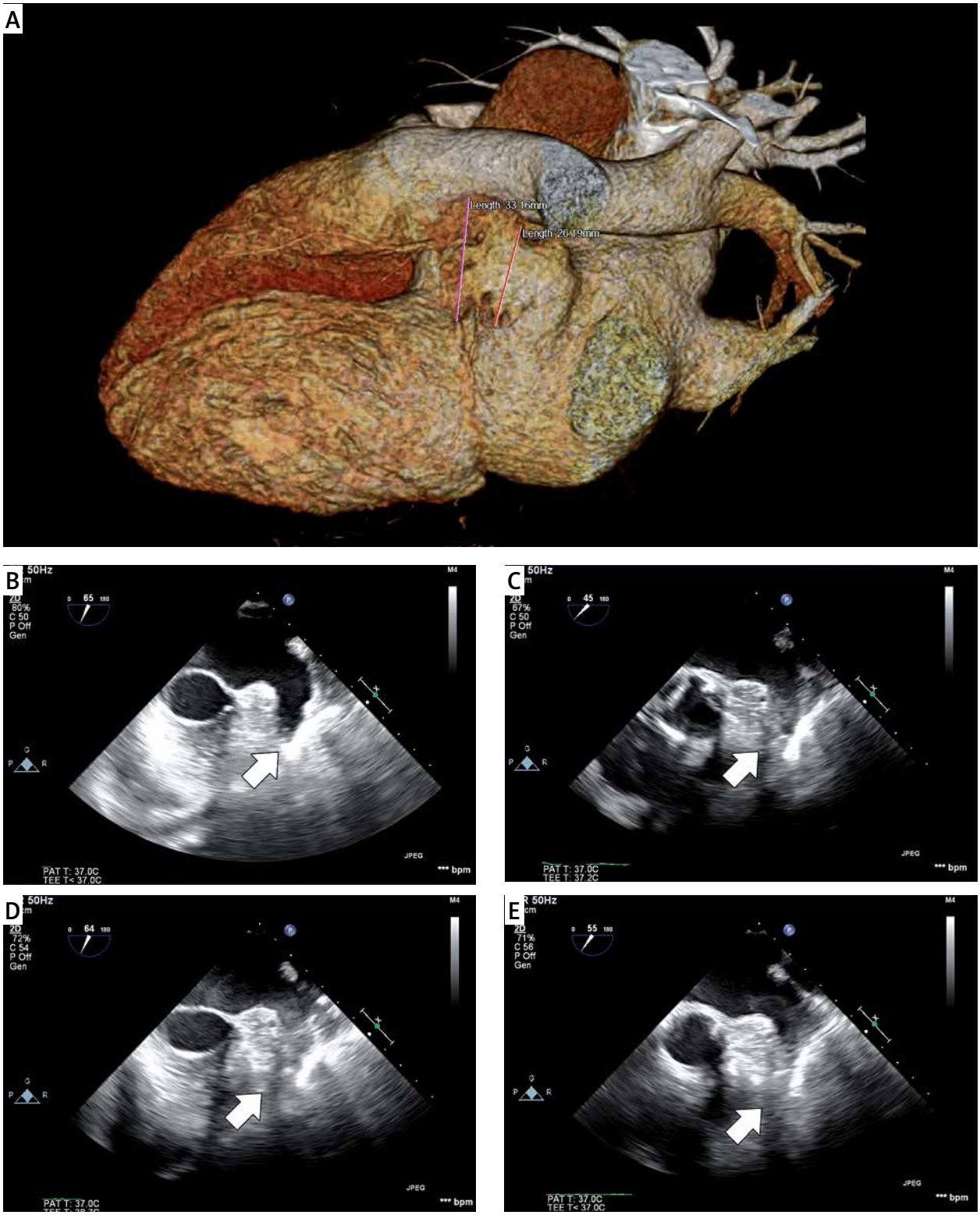

Figure 1. A – 3D computed tomography reconstruction scan with measurements of the left atrial appendage (LAA), **B** – transesophageal echocardiogram (TEE) at 3.57 PM with no thrombus in LAA (arrow), **C** – TEE at 4.27 PM with a fresh thrombus formed in less than 20 min, **D** – TEE at 4.31 PM with a solid fresh thrombus in the LAA, **E** – TEE the next day with partial dilution of the LAA thrombus

ment. In such a case, epicardial LAA closure should be considered for effective thromboembolic protection.

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Conflict of interest

K. Bartus is a consultant to SentreHEART, Inc. R. Lee is a consultant and equity ownership for SentreHEART, Inc. Remaining authors declare no conflict of interest.

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