

# Intraprocedural thrombus formation in a patient with anticoagulated atrial fibrillation

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## DESCRIPTION

A 57-year-old man with 16-year history of persistent atrial fibrillation (AF) was admitted for electrophysiology study and catheter ablation. He was on amiodarone, carvedilol and warfarin. His international normalised ratio (INR) was 2.2. Intracardiac echocardiogram (ICE) prior to atrial septum puncture did not show any spontaneous echo contrast. After advancing the sheath across the interatrial septum, it was flushed with heparin. A few seconds after sheath placement and prior to placement of lasso catheter a linear thrombus developed which was visible on ICE (figure 1; videos 1 and 2). Activated clotting time (ACT) of >250 ms was maintained prior to trans-septal puncture and after thrombus was seen; heparin was administered to maintain ACT>300 ms. The sheath and catheter were retracted into the inferior vena cava, and with continuous heparin infusion, the thrombus resolved. During hospitalisation and



**Video 2** A view of the left atrium showing the thrombus.

follow-up, patient remained asymptomatic without neurological complications.

Intraprocedural thrombus formation is a rare complication of AF ablation with incidence of 10%.<sup>1</sup> Strikingly, despite therapeutic INR, thrombus in our patient was extensive and formed within seconds after the trans-septal sheath was inserted into the left atrium (LA). Since the time across septum was <1 min, it is unlikely that the clot extruded from sheath. It is more likely that thrombus started forming outside sheath, as shown previously in another study.<sup>1</sup> This may be related to activation of coagulation cascade secondary to endothelial injury during catheter advancement into the LA.<sup>2</sup> Maintaining ACT>300 ms is routine part of our AF ablation procedures.

Around 90% of LA thrombi are formed in the LA appendage.<sup>3</sup> Our case illustrates that thrombus can form elsewhere in the right atrium or LA.



**Figure 1** Intracardiac echocardiogram image showing a thrombus strand extending through the interatrial septum.



**Video 1** A view of left atrium showing a string of thrombus across the interatrial septum.

## Learning points

- ▶ Atrial fibrillation can be highly thrombogenic.
- ▶ Although the left atrial appendage is the most common site of thrombus formation, the thrombus can form elsewhere in the right and left atrium.

**Contributors** AGK performed the procedure and conceived the idea of writing it up. SG and KKK did the literature search and wrote the manuscript. AGK did the proofreading and final editing.

**Competing interests** None declared.

**Patient consent** Obtained.

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