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## Massive left atrial thrombus in a patient with left atrial appendage closure

Fabian Barbieri<sup>1</sup>, Youssef S. Abdelwahed<sup>1,2</sup>, Ulf Landmesser<sup>1,2,3</sup>, Markus Reinthaler<sup>1,4,\*</sup>, Carsten Skurk<sup>1,2,\*</sup>

- <sup>1</sup> Charité - Universitätsmedizin Berlin, corporate member of Freie Universität Berlin, Humboldt-Universität zu Berlin, and Berlin Institute of Health, Department of Cardiology, Campus Benjamin Franklin, Berlin, Germany
  - <sup>2</sup> DZHK (German Centre for Cardiovascular Research), Partner site Berlin, Berlin, Germany
  - <sup>3</sup> Berlin Institutes of Health (BIH), Berlin, Germany
  - <sup>4</sup> Institute of Active Polymers and Berlin-Brandenburg Centre for Regenerative Therapies (BCRT), Helmholtz-Zentrum Hereon, Teltow, Germany
- \* Markus Reinthaler and Carsten Skurk contributed equally to this work

**Short title:** Massive LA thrombus in a patient with LAAC

**Key words:** Atrial fibrillation, device-related thrombus, left atrial appendage closure, stroke, thromboembolism

**Conflicts of Interest:** None.

**Correspondence to:**

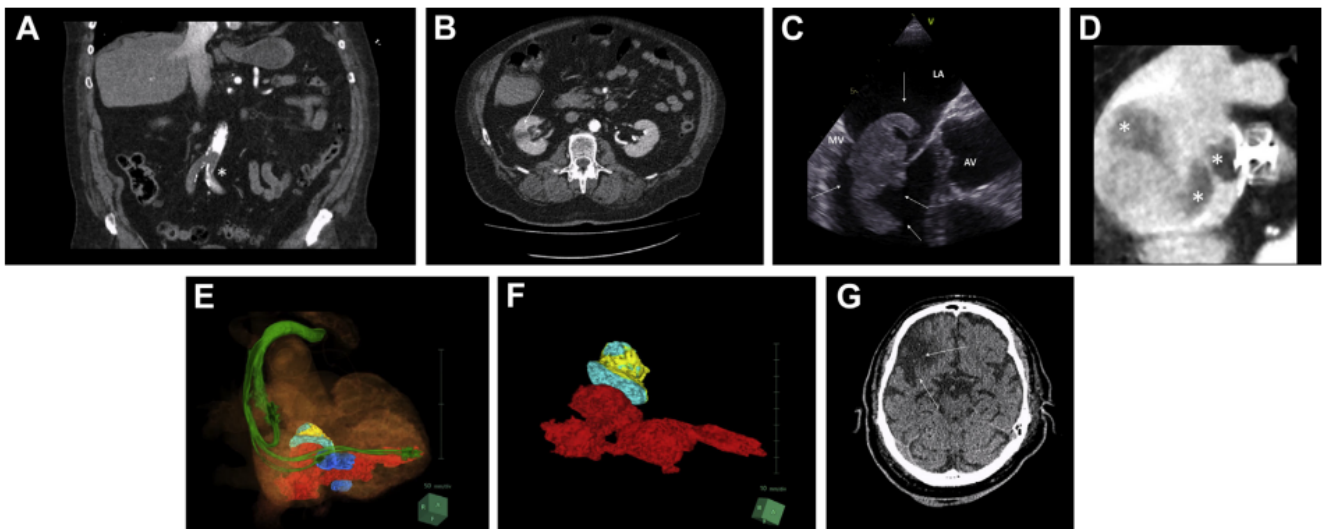
Dr. Fabian Barbieri

Charité – Universitätsmedizin Berlin  
Campus Benjamin Franklin  
Department of Cardiology  
Hindenburgdamm 30  
12203 Berlin, Germany  
Email: fabian.barbieri@charite.de

An 80-year-old man presented to the emergency department because of sudden pain in his right leg. Medical history included atrial fibrillation (CHADS-VASc = 9) and percutaneous left atrial appendage closure (LAAC), which was performed 2 years ago and evaluated by repetitive post-procedural transesophageal echocardiography confirming adequate position of the device without device-related thrombus or residual flow. Diagnostic work-up revealed a Leriche syndrome and multiple renal infarctions (Figures 1A and 1B) due to partial thromboembolism of a massive, mobile thrombus situated in the left atrium with intermittent left-ventricular prolapse (Figures 1C to 1F, Videos 1, 2, and 3), despite uninterrupted intake of

acetylsalicylic acid. Because the patient was neurologically unremarkable, transfemoral thrombectomy was conducted to resolve critical leg ischemia and followed by consecutive open left atrial thrombectomy in order to prevent further thromboembolism. Postoperatively, the patient was admitted to an intensive care unit yielding prolonged weaning. Cranial computed tomography revealed chronic infarction gliosis in the left occipital and frontotemporal lobe as well as hypodense areas in the right frontal and left occipital lobe, suggestive for subacute ischemic stroke (Figure 1G).

Percutaneous LAAC is an emerging therapy for patients with atrial fibrillation and concomitant risk of thromboembolism. Our case describes the formation of a massive left atrial thrombus in a patient with previously conducted LAAC under ongoing antiplatelet therapy. The case raises the question whether LAAC and oral anticoagulation may need to be combined for optimal preventive therapy in very high-risk patients.



**Fig. 1: Diagnostic work-up by computed tomography and transesophageal echocardiography.** Computed tomography showing thromboembolic occlusion of aortoiliac bifurcation (asterisk) (A) and infarction of the right kidney (arrows) (B). Transesophageal echocardiography revealed a massive left atrial thrombus (C). Cardiac computed tomography angiography determined left atrial/ventricular thrombus (asterisk) originating at the LAAC device (Amplatzer Amulet, 25 mm, Abbott) (D). Three-dimensional reconstruction of cardiac computed tomography angiography data (Fujifilm Synapse 3D, Fujifilm) illustrating the device (cyan) and its adherent massive, mobile left atrial thrombus formation (red) with intermittent prolapse into the left ventricular cavity (mitral valve in blue) (E).

Tissue subtraction reveals thrombus and device insertion (F). Cranial computed tomography showing subacute stroke (arrows) (G). AV = aortic valve; LA = left atrium; LAAC = left atrial appendage closure; MV = mitral valve.

**Declaration:**

The authors attest they are in compliance with human studies committees and animal welfare regulations of the authors' institutions and Food and Drug Administration guidelines, including patient consent where appropriate. F