

IMAGING VIGNETTE

CLINICAL VIGNETTE

Nonoperative Management of Iatrogenic Right Atrial Appendage Pseudoaneurysm During Catheter Ablation



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ABSTRACT

Atrial pseudoaneurysms are exceedingly rare. Cardiac pseudoaneurysms are at risk for rupture, which may be catastrophic and require emergent thoracotomy for definitive treatment. We report a case of right atrial appendage perforation during catheter ablation leading to tamponade and right atrium pseudoaneurysm. (J Am Coll Cardiol Case Rep 2024;29:102147) © 2024 The Authors. Published by Elsevier on behalf of the American College of Cardiology Foundation. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

Catheter ablation has become a preferred approach for many patients with paroxysmal atrial fibrillation (PAF).¹ However, this procedure carries a risk for serious complications including cardiac tamponade, stroke, and atrio-esophageal fistula.² We report a rare complication of right atrial pseudoaneurysm formation resulting from iatrogenic perforation.

CASE PRESENTATION

A woman in her 80s with PAF and hypertrophic obstructive cardiomyopathy presented for ablation of symptomatic PAF. Physical examination on admission was unremarkable. After heparin administration, a single transeptal puncture was performed without difficulty under intracardiac ultrasound guidance. The left atrium was mapped, and cryoablation was performed with a Medtronic cryoballoon for 2-4 minutes, with 2 or more applications per vein as needed to achieve entrance block. After the left veins were isolated, the coronary sinus catheter was then advanced with difficulty under fluoroscopic guidance into the superior vena cava for phrenic pacing. Ablation of the right veins was completed. The patient then developed AF that organized into atypical flutter. Amiodarone 150 mg was given but cardioversion failed to restore normal sinus rhythm. Subsequently, left atrial mapping was attempted but was unsuccessful owing to cycle length instability. At this time, the patient became increasingly hypotensive and intracoronary echocardiography confirmed the diagnosis of pericardial effusion with tamponade. Protamine was given to reverse heparin. Initially, 700 mL of blood was evacuated from the pericardial space with hemodynamic improvement. However, after several minutes, the patient became hypotensive again. Intracoronary echocardiography showed at least a moderate residual pericardial effusion with probable thrombus formation. A bedside subxiphoid window was performed, and a pericardial drain was placed. No further bleeding was visualized.

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**ABBREVIATIONS
AND ACRONYMS****AF** = atrial fibrillation**PAF** = paroxysmal atrial
fibrillation

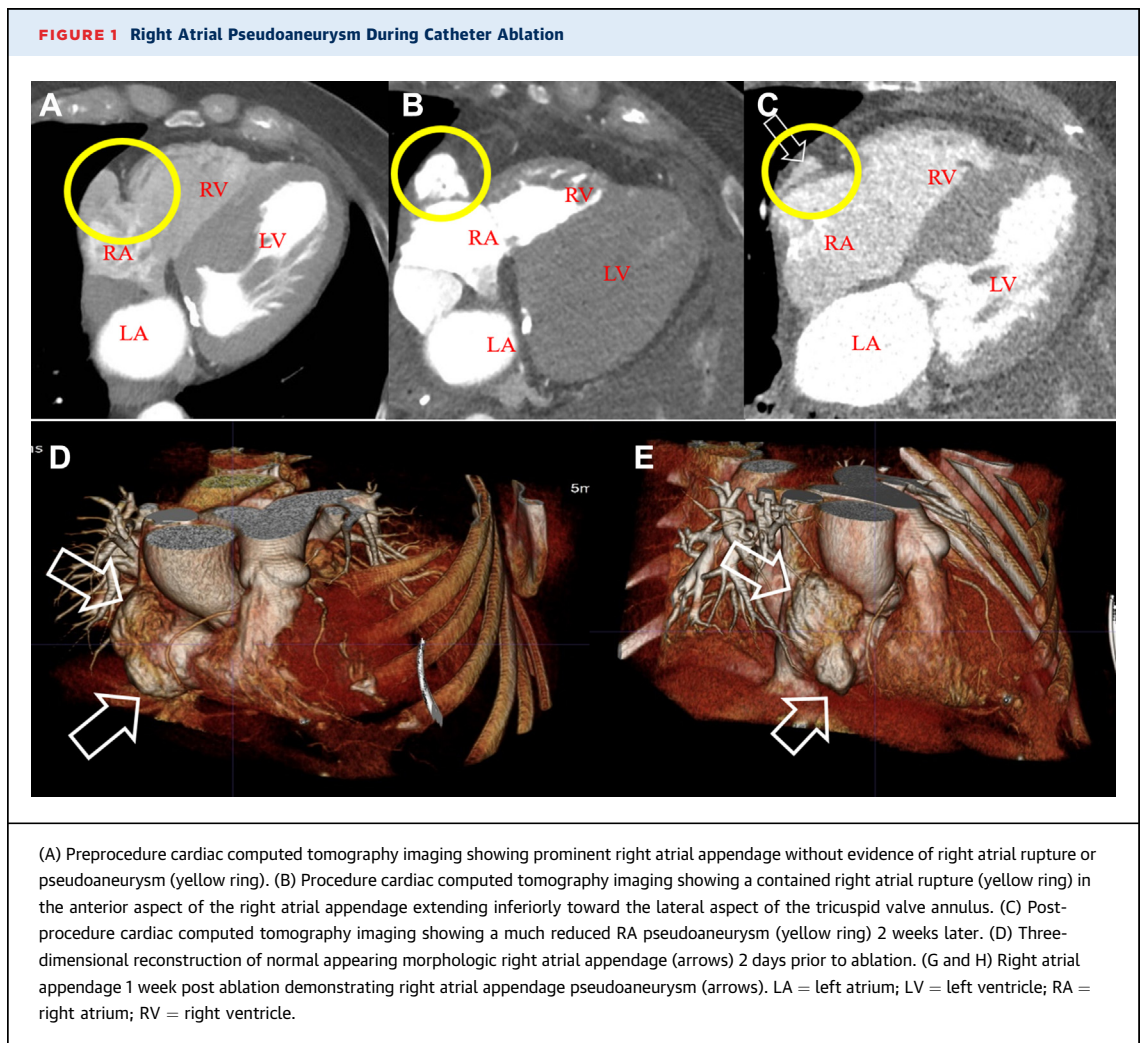
Two days later, cardiac computed tomography revealed a contained right atrial pseudoaneurysm in the anterior and superior aspect of the right atrial appendage (Figure 1). An interdisciplinary discussion was held among cardiothoracic surgery, electrophysiology, and cardiac intensivists who agreed that nonsurgical management was an acceptable option for this elderly patient with hypertrophic cardiomyopathy who had remained stable without recurrent bleeding for several days. Follow-up transthoracic echocardiography demonstrated stability of the right atrial pseudoaneurysm. The patient was started on direct oral anticoagulation therapy, and amiodarone was continued for her incessant atrial arrhythmias.

The patient was discharged home on postoperative day 9. At 3-month follow-up, the patient was in normal sinus rhythm and reported a resolution of her symptoms, including palpitations and shortness of breath; therefore, amiodarone was discontinued.

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KEY WORDS ablation, atrial fibrillation, pericardial effusion, pseudoaneurysm, radiofrequency, right atrium, tamponade