JACC: CASE REPORTS VOL. 2, NO. 6, 2020

MINI-FOCUS ISSUE: COMPLICATIONS

BEGINNER

IMAGING VIGNETTE: CLINICAL VIGNETTE

Giant Iatrogenic Pseudoaneurysm of Right Pulmonary Artery Compressing the Left Atrium

Reem Al Sergani, MS,[a] Domenico Galzerano, MD,[b,c] Vito Maurizio Parato, MD,[b,d] Mohammed Al Admawi, MD,[b] Mansour AlJufan, MD[b]

ABSTRACT

We describe a case of giant pseudoaneurysm of the right pulmonary artery compressing the left atrium after percutaneous pulmonary valve implantation and right pulmonary artery dilatation. Such a complication mimicking an intracavity left atrial mass and treated successfully by stent placement has never, to the best of our knowledge, been reported. (**Level of Difficulty: Beginner.**) (J Am Coll Cardiol Case Rep 2020;2:870–2) © 2020 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/).

The authors report a case of a giant pseudoaneurysm of the right pulmonary artery (RPA) that was compressing the left atrium and complicating transcatheter RPA dilatation in a 40-year-old woman with tetralogy of Fallot and left pulmonary artery (LPA) hypoplasia previously treated with ventricular septal defect closure, pulmonary valvotomy, and LPA stenting.

She was found to have residual severe pulmonary regurgitation, stenosis of the proximal RPA, right ventricular dilatation with mildly depressed function, and reduced exercise tolerance. Angiography showed a dilated right ventricle with mildly depressed function, severe pulmonary regurgitation, a good RPA size distally with narrowing just at the takeoff, and a small stented LPA with adequate flow.

She therefore underwent percutaneous pulmonary valve implantation with a size 26 Edwards Sapien valve (ESV) (Edwards Lifesciences, Irvine, California) and RPA dilatation. The procedure was complicated by an intimal tear of the RPA with extravasation into the mediastinum. This tear was treated by giving intravenous protamine sulfate 50 mg, and she was transferred to the intensive care unit. Post-procedural angiography showed a competent ESV, an RPA of good size, and appropriate position of ESV with no gradient.

Three days later, the patient started to report chest pain and underwent transthoracic echocardiography. This imaging showed the presence of a pulsatile cavity in the roof of the left atrium that mimicked a mobile oval mass (2.5 × 1.8 cm), an RPA intimal flap with an inferior tear, and an inferior pseudoaneurysm (**Figures 1A to 1C**, Videos 1, 2, and 3).

From the [a]College of Medicine, King Saud University, Riyadh, Saudi Arabia; [b]The Heart Centre, King Faisal Specialist Hospital & Research Centre, Riyadh, Saudi Arabia; [c]College of Medicine, Alfaisal University, Riyadh, Saudi Arabia; and the [d]Emergency Department, Cardiology Unit, Azienda Sanitaria Unica Regionale ASUR, Marche, Health Public Company of Marche Region, San Benedetto del Tronto, Italy. The authors have reported that they have no relationships relevant to the contents of this paper to disclose.

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. For more information, visit the *JACC: Case Reports* author instructions page.

Manuscript received October 24, 2019; revised manuscript received February 14, 2020, accepted March 3, 2020.

ISSN 2666-0849 https://doi.org/10.1016/j.jaccas.2020.03.035

ABBREVIATIONS AND ACRONYMS

ESV = Edwards Sapien valve

LPA = left pulmonary artery

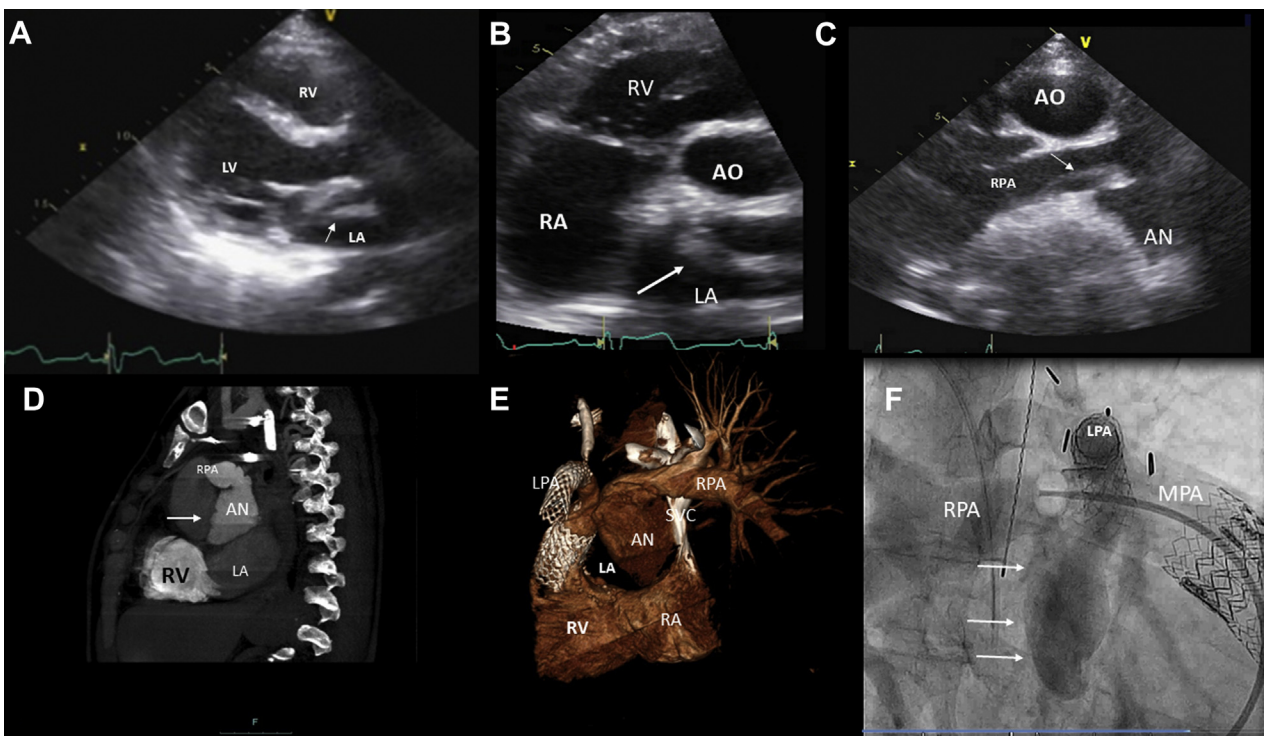
RPA = right pulmonary artery

Further, a computed tomography scan with contrast enhancement showed a tear within the inferior portion of the proximal RPA with a pseudoaneurysm between the RPA and the ascending aorta and left atrium (**Figures 1D and 1E**, Video 4). The ESV was seen in situ and was functioning well; the RPA tree showed good opacification. Angiography confirmed the presence of a pseudoaneurysm (**Figure 1F**, Video 5).

Surgery was a possible therapeutic strategy because of the large size of the pseudoaneurysm; however, it was decided to proceed with an endovascular approach and to treat the lesion with stent implantation (1,2). The RPA tear was successfully closed, and there was complete reabsorption in the follow-up. Post-procedural angiography showed the stent in proper position with no residual leak (Video 6). Favorable results were confirmed during patient follow-up.

Even though pseudoaneurysm is a known complication of percutaneous pulmonary valve implantation, to the best of our knowledge, such a case of giant pseudoaneurysm compressing the left atrium, mimicking an intracavity mass, and successfully treated by stent placement has, to the best of our knowledge, never been reported. Our case provides detailed imaging and highlights the potential of endovascular treatment for such a fearsome complication.

FIGURE 1 Giant RPA Pseudoaneurysm Compressing the Left Atrium



(A) Transthoracic echocardiography, parasternal long-axis view, showing a pulsatile mass in the left atrium (LA). The *arrow* points to the pseudoaneurysm (Video 1). **(B)** Transthoracic echocardiography, short-axis view, showing a pulsatile mass in the left atrium. The *arrow* points to the pseudoaneurysm (Video 2). **(C)** Transthoracic echocardiography, suprasternal long-axis view, showing right pulmonary artery (RPA) dissection, tear of the wall, and the pseudoaneurysm (AN). The *arrow* points to the intimal dissection (Video 3). **(D)** Contrast computed tomography, oblique sagittal reformat view, showing extravasation of contrast medium through the right pulmonary artery inferior wall tear into a pocket pseudoaneurysm located between the aortic root and ascending aorta and the left atrium and superior vena cava (SVC) (Video 4). **(E)** 3-dimensional computed tomography reconstruction images, posterior view of the heart, showing extravasation of contrast medium through the right pulmonary artery inferior wall tear into a pseudoaneurysm located between the aortic root and ascending aorta and the left atrium and superior vena cava. **(F)** Angiography, right anterior oblique cranial view, showing extravasation of contrast medium into a pseudoaneurysm **(arrows)** (Video 5). AO = aorta; LPA = left pulmonary artery; LV = left ventricle; MPA = main pulmonary artery; RA = right atrium; RV = right ventricle.

ADDRESS FOR CORRESPONDENCE: Dr. Vito Maurizio Parato, Emergency Department, Cardiology Unit, ASUR Marche-Madonna del Soccorso Hospital, 3-7, Via Manara, 63074 San Benedetto del Tronto, Italy. E-mail: vitomaurizio.parato@sanita.marche.it. Twitter: @ParatoMaurizio.

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KEY WORDS complication, computed tomography, echocardiography, right-sided catheterization

APPENDIX For supplemental videos, please see the online version of this paper.