

## IMAGING VIGNETTE

## ADVANCED

## CLINICAL VIGNETTE

# Coil Embolization of a Ruptured Mycotic Coronary Artery Aneurysm in a Pediatric Patient



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## ABSTRACT

Mycotic coronary artery aneurysms are rare but have a high risk of mortality. Traditional management is surgical, but percutaneous intervention can be performed in patients with high surgical risk. In this report, we describe a case of mycotic coronary aneurysm in a pediatric patient successfully managed with percutaneous coil embolization. (**Level of Difficulty: Advanced.**) (J Am Coll Cardiol Case Rep 2023;21:101967) © 2023 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/>).

A 12-year-old boy with thoracic synovial sarcoma was admitted to the oncology service for chemotherapy and thoracic radiation. His vital signs on admission demonstrated tachycardia, with a heart rate of 138 beats/min. His weight was 57 kg. His physical examination was unremarkable, without murmur, rub, or gallop. He developed polymicrobial pneumonia with pleural and pericardial effusions. Six weeks later he developed hemodynamic instability due to hemorrhage from his thoracostomy tube. Computed tomography angiography (CTA) demonstrated a 27-mm × 20-mm bilobed mass suggestive of a ruptured mycotic coronary artery aneurysm (MCAA) arising from a branch of the left circumflex coronary artery (LCX). Electrocardiograms demonstrated an intermittent Mobitz type II second-degree atrioventricular block (AVB) without ST-segment changes or Q waves. Echocardiograms demonstrated regional hypokinesis of the mid and apical segments of the left ventricular lateral wall, with preserved global left ventricular systolic function. The patient was not a candidate for surgical intervention because of his previous chest radiation and disseminated malignancy. He was therefore referred to the cardiac catheterization laboratory for percutaneous coronary artery intervention.

Angiography demonstrated 2 large aneurysms originating from the first marginal branch of the LCX (Video 1); a small distal vessel opacified late. A pacing catheter was placed in the right ventricle in case of iatrogenic AVB. An Amplatz left guide catheter was used to engage the left coronary artery and to direct a 0.014-inch guidewire into the aneurysm. The wire was exchanged for a 2.6-F Penumbra Lantern microcatheter, through which a series of Penumbra coils (4 60-cm packing and 2 Ruby Soft coils) (Penumbra, Inc) were advanced, filling both aneurysms. Angiograms after intervention demonstrated no residual flow into the aneurysms or the distal vessel (Video 1). In previously reported adult cases of MCAA, stent angioplasty and coil

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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 [Author Center](#).

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**ABBREVIATIONS  
AND ACRONYMS**

**AVB** = atrioventricular block  
**CTA** = computed tomography angiography  
**LCX** = circumflex coronary artery  
**MCAA** = mycotic coronary artery aneurysm

embolization have been used.<sup>1,2</sup> In our patient, the potential risk of further vascular injury in the setting of a ruptured aneurysm made stent angioplasty unappealing. Penumbra coils were chosen in the hope that they would fill the aneurysm and stop bleeding with less risk of vascular injury. Ruby coils are designed to form a frame inside the aneurysm without exerting significant radial force. Packing coils can then be advanced to fill the lesion with less risk of tissue injury than with conventional coils. The use of these coils for embolization of cerebral aneurysms has been described,<sup>3</sup> but to our knowledge this is the first report of their use in a coronary aneurysm.

The patient's serum troponin peaked 24 hours after the procedure, and no ST-segment changes were seen. Echocardiography demonstrated mild, unchanged regional hypokinesis of the left ventricle with low-normal global left ventricular systolic function. He was discharged and, at his 3-month follow-up visit, had normalization of left ventricular systolic function. A repeat CTA performed 16 weeks after intervention demonstrated stable coil position and no extravasation of contrast.

This case demonstrates the feasibility of percutaneous embolization of ruptured MCAAs with soft coils through a guide catheter and microcatheter. In aneurysms with broad bases relative to vessel diameter, occlusion of the vessel with a combination of coils may be advantageous.

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**KEY WORDS** congenital heart defect, left-sided catheterization, percutaneous coronary intervention

**APPENDIX** For a supplemental video, please see the online version of this paper.