A 49-year-old man with multiple coronary risk factors, including diabetes mellitus, hypertension, and hyperlipidemia, was referred for coronary angiography for evaluation of mild dyspnea on exertion and atypical chest pains. An exercise nuclear stress test demonstrated mild, reversible ischemia in the mid and distal inferior wall. The patient subsequently underwent cardiac catheterization, which demonstrated a giant coronary arterial-venous (A-V) fistula arising from a markedly dilated and tortuous circumflex artery (Figure 1). The vessel course could not be well delineated because of its tortuosity and the inability to fully opacify this structure with contrast. The other primary epicardial coronary arteries were angiographically normal. A small left-to-right shunt was detected, with Qp/Qs = 1.29.

The patient was referred for a cardiac computed tomography (CT) angiography performed on a 64-slice multidetector CT scanner to further define the coronary anatomy (Figure 2). The coronary calcium score was 671, with 651 in the circumflex artery and 20 in the left anterior descending artery. The left main artery was dilated, with a maximum diameter of 12 mm at the origin and a minimum diameter of 10 mm at the bifurcation. The proximal circumflex was tortuous and markedly dilated (10 mm in diameter) and bifurcated into 2 branches: a normal-sized, nondominant distal circumflex that coursed within the left atrioventricular groove and a long, markedly dilated A-V fistula. The diameter of the A-V fistula ranged from 10 to 18 mm, and the fistula followed a looping course posterior to the pulmonary artery before draining into the superior portion of the right atrium (Figures 3 and 4). The left anterior descending artery revealed nonobstructive calcified plaque. The dominant right coronary artery was unremarkable. The patient was referred to a cardiac surgeon for repair of the A-V fistula. The proximal and distal portions of the fistula were divided, decompressed, and left in situ. At the conclusion of the case, there was no flow in...
A coronary A-V fistula is an abnormal communication that arises from a coronary artery and terminates in a cardiac chamber, great vessel, or other vascular structure. Coronary A-V fistulas are found incidentally in 0.02% to 2.1% of angiographic studies and vary by ethnicity, with the highest reported incidence in the Japanese population.1 Dyspnea and chest pain are the most common symptoms in adults, whereas the majority of children are asymptomatic.2 A-V fistulas are associated with adverse clinical outcomes such as left-to-right shunting, myocardial ischemia secondary to coronary steal, and potential for mural thrombosis at the ectatic locations.3 Fistulas can be closed with a variety of percutaneous transcatheter closure techniques, including the use of detachable balloons, platinum microcoils, or steel coils.4 The complex anatomy of the fistula in our patient precluded the potential use of any of these techniques; instead, a surgical approach was pursued.

Conventional coronary angiography is a commonly used diagnostic modality for tracing the anatomic course of giant coronary A-V fistulas. We illustrate the invaluable role of CT angiography to clearly define the complex A-V fistula by laying out the anatomy in a 3-dimensional representation that can help guide the surgical approach in ways that coronary angiography alone cannot. CT angiography is an important tool for defining the complex anatomy of giant coronary A-V fistulas and their relation to adjacent structures in anticipation of surgical intervention.

Disclosures
None.

References
Giant Left Circumflex Coronary Fistula to the Right Atrium
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