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IMAGING VIGNETTE

ADVANCED

CLINICAL VIGNETTE

Percutaneous Approach for Late Left Main Coronary Detachment Resulting in Aortic Pseudoaneurysm After Bentall Procedure

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ABSTRACT

We describe the case of 35-year-old patient with known Marfan syndrome, and previously treated by a Bentall procedure, who presented with an aortic pseudoaneurysm secondary to a partial proximal left main coronary artery detachment fixed by covered stent implantation. (**Level of Difficulty: Advanced.**) (J Am Coll Cardiol Case Rep 2021;3:1586–1588) © 2021 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/).

Adequate reimplantation or reconstruction of the coronary ostia, especially the left coronary ostium for anatomical reasons, is the main technical challenge for surgeons performing aortic root composite valve graft replacement. Indeed, regular follow-up is required because of the infrequent late lethal surgical-related complications, such as dehiscence of the coronary ostial anastomosis, ascending aorta aneurysm, and left main coronary aneurysm or stenosis.

To our knowledge, this is the first case of proximal detachment of left main coronary anastomosis resulting in aortic pseudoaneurysm managed that was with a percutaneous approach in a 35-year-old adult known to have Marfan syndrome and presenting with acute coronary syndrome. His past medical history included a Bentall procedure (February 2014) for bicuspid aortic valve regurgitation with aneurysmal aortic dilation and redo surgery with composite aortic root composite valve graft replacement for bacterial endocarditis (June 2014). The diagnosis was made by an enhanced aortic computed tomography (CT) scan showing a left main coronary artery originating from a gap between the aneurysmal wall and the aortic graft tube associated with a contrast-enhanced 70 × 20 mm proximal ascending aorta pseudoaneurysm (**Figures 1A and 1B,** Video 1). Following a multidisciplinary expert opinion, we decided to perform a less invasive percutaneous approach because of the high risk and complexity of a third surgical intervention. Gaining access through the right radial artery through an 8-F introducer sheath, the aortogram and selective left coronary angiography showed retrograde leakage of dye in the aneurysmal gap (Video 2). Then, a 7 × 28 mm covered BeGraft Peripheral Stent (Bentley) was implanted in the left main coronary artery to connect the detached left main ostium to the composite graft, excluding the aortic pseudoaneurysm. This stent was chosen because it seemed to be the one available that fit best with the hole dimensions. A repeated contrast aortogram at the end of procedure showed

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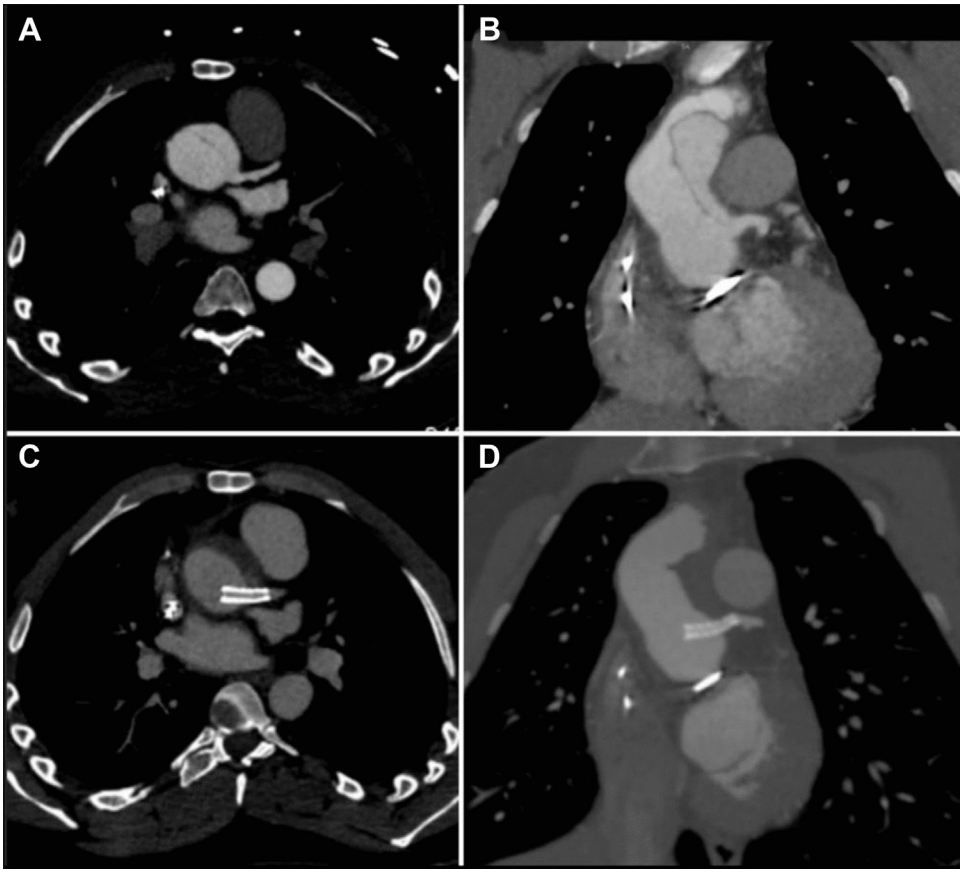
a good angiographic result, excluding the aortic pseudoaneurysm (Video 3). An enhanced aortic CT scan at follow-up revealed a thrombosed false lumen in the ascending aorta (**Figures 1C and 1D,** Video 4). We noted an improvement of left ventricular ejection fraction from 35% to 50% on echocardiography, maybe caused by re-establishing normal coronary blood flow, excluding the pre-existing coronary steal syndrome.

ABBREVIATIONS AND ACRONYMS

CT = computed tomography

To summarize, the prolonged survival or life expectancy after a Bentall procedure increases the prevalence of rare late complications such as dehiscence of coronary anastomosis and pseudoaneurysm formation. In this case, the presence of connective tissue disease (Marfan syndrome) and the previous aortic annulus setting of bacterial endocarditis are the more likely risk factors. Moreover, the tension on the suture line and anastomotic ligation technique are previously described predictive factors (1,2). The "modified Bentall procedure" or "open-button technique" was developed to reduce classic Bentall-related complications (1,2). Finally, we emphasize the feasibility of a percutaneous approach as a successful alternative strategy to repeat surgical intervention in such a critical situation. However, we understand that the long-term outcome of this approach in a young patient remains to be determined.

FIGURE 1 Computed Tomography Imaging



(A and B) Enhanced coronal and axial computed tomography showing an opacification of the true and false aortic lumen with left main coronary artery detachment. **(C and D)** Enhanced coronal and axial computed tomography showing the left main stent and a thrombosed aortic false lumen.

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KEY WORDS aorta, percutaneous coronary intervention, stents

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