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BEGINNER

IMAGING VIGNETTE: CLINICAL VIGNETTE

Giant Aneurysm of the Right Coronary Artery

Multimodality Imaging and Interventional Management

Holger H. Sigusch, MD,[a] Peter Bergmann, MD,[a] Torsten Doenst, MD, PhD,[b] Jens Gerth, MD[c]

ABSTRACT

A large (40-mm) circular structure in the right atrioventricular groove was detected by transthoracic echocardiography and was diagnosed as a giant aneurysm of the right coronary artery. Through invasive mapping by a guide extension catheter, the aneurysm could be excluded by implantation of 3 overlapping stent grafts. (**Level of Difficulty: Beginner.**) (J Am Coll Cardiol Case Rep 2021;3:778–9) © 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/).

CASE DESCRIPTION

An 82-year-old man was admitted to our vascular surgery department (Department of Vascular Surgery, Heinrich-Braun-Klinikum Zwickau, Germany) for surgical treatment of aneurysms of the distal superficial femoral and popliteal arteries. Pre-operative echocardiography showed a circular structure in the right atrioventricular groove (**Figure 1A**). Computed tomography angiography (CTA) revealed a giant coronary artery aneurysm of the midportion of the right coronary artery with a maximum diameter of 40 mm (**Figures 1B and 1C**), which was confirmed by invasive coronary angiography (**Figure 1D**) (Videos 1 and 2).

A heart team decision was made for interventional treatment. Three overlapping Abbott Graftmaster RX 4.8 × 26 mm stent grafts (Abbott Laboratories, Abbott Park, Illinois, USA) were used and implanted uneventfully. To overcome impaired distal filling, a 7-F guide extension catheter (GuideLiner V2 Catheter, Vascular Solutions, Minneapolis Minnesota, USA) was used to "map" the take-off of the aneurysm and to facilitate correct stent graft implantation (Videos 3 to 9). Complete exclusion of the aneurysm has been confirmed at the end of the procedure angiographically (**Figure 1E**) (Video 10) and by coronary CTA (**Figure 1F**) 9 days after the successful procedure.

Aneurysmal coronary artery disease is defined as a localized luminal dilatation of measuring at least 1.5 times the diameter of the normal adjacent segment and is seen in 0.3% to 5% of patients who are undergoing invasive coronary angiography (1-3). Extremely large aneurysms, as reported here (40 mm), are very rare. In our own series of 33,800 invasive coronary angiograms, we have not had another single case of an aneurysmal coronary artery of this extent.

At 6 months after treatment, the patient remains asymptomatic.

From the [a]Division of Cardiology, Department of Internal Medicine, Heinrich Braun Clinic, Zwickau, Germany; [b]Department of Cardiothoracic Surgery, Jena University Hospital, Friedrich Schiller University of Jena, Jena, Germany; and the [c]Division of Nephrology, Department of Internal Medicine, Heinrich Braun Clinic, Zwickau, Germany.

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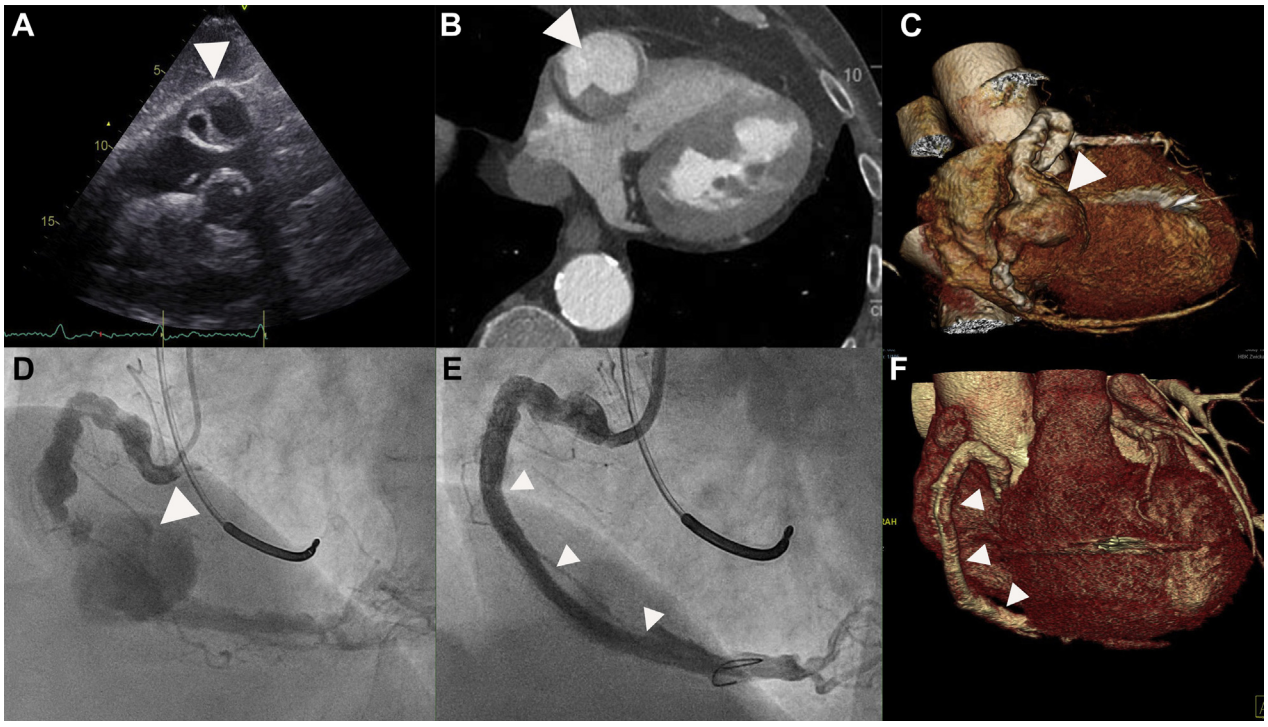
Treatment planning should involve cardiac computed tomography and invasive coronary angiography, and the strategy should be based on the heart team's decision. A guide extension catheter is a very useful tool for mapping the neck of the aneurysm if distal filling is impaired.

ABBREVIATIONS AND ACRONYMS

CTA = computed tomography angiography

FIGURE 1 Multimodality Imaging and Interventional Treatment by Stent Graft Implantation of a Giant Right Coronary Artery Aneurysm



(A) Echocardiography, subcostal view, round structure **(arrowhead)** in the right atrioventricular sulcus. **(B)** Computed tomography of the heart showing the large aneurysm **(arrowhead). (C)** A 3-dimensional reconstruction of the computed tomography images of the heart showing the complete extent and anatomic relationship of the aneurysm **(arrowhead). (D)** Coronary angiography in the left anterior oblique projection of the right coronary artery clearly showing the large aneurysm **(arrowhead)** and the attenuated distal filling. **(E)** Angiographic result after implantation of 3 overlapping stent grafts (each stent graft measuring 4.8 × 26 mm) **(arrowheads). (F)** A 3-dimensional computed tomography image after interventional treatment of the right coronary artery reconstructed by 3 stent grafts **(arrowheads).**

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ADDRESS FOR CORRESPONDENCE: Dr. Holger H. Sigusch, Division of Cardiology, Department of Internal Medicine, Heinrich Braun Clinic-Zwickau, Karl-Keil-Strasse 35, 08060 Zwickau, Germany. E-mail: holger.sigusch@gmail.com.

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KEY WORDS coronary aneurysm, guide extension catheter, interventional treatment, stent graft

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