

Transcatheter coil embolization of multiple symptomatic coronary arteriovenous fistulas: lessons from long-term follow-up

Minsu Kim¹, Sung Soo Byun², Charanjit S. Riah³, Eak Kyun Shin⁴, Seung Hwan Han⁵

1 Division of Cardiology, Department of Internal Medicine, Hallym University Chuncheon Sacred Heart Hospital, Chuncheon, Republic of Korea

2 Department of Radiology, Gachon University Gil Medical Center, Incheon, Republic of Korea

3 Division of Cardiovascular Disease, Mayo Clinic College of Medicine, Rochester, Minnesota, United States

4 Division of Cardiology, Department of Internal Medicine, University of California San Francisco Medical Center at Mission Bay Campus, San Francisco, California, United States

5 Division of Cardiology, Department of Internal Medicine, Gachon University Gil Medical Center, Incheon, Republic of Korea

A 52-year-old woman was admitted to the hospital due to dyspnea on exertion and abnormalities seen on electrocardiography, namely, the T-wave inversion in leads V_2 – V_6 . Cardiac computed tomography angiography showed multiple coronary arteriovenous (AV) fistulas communicating the left main coronary artery, mid-left anterior descending artery (LAD), and right coronary artery (RCA) ostium with the main pulmonary artery (PA) (FIGURE 1A and 1B). The patient was further examined by coronary angiography (Supplementary material, *Figure S1A* and *S1B*, *Videos S1* and *S2*).

During cardiac catheterization, the left-to-right shunt was moderate (Qp/Qs, 1.72), and pulmonary vascular resistance and PA pressure increased to 402.2 (dyn·s)/cm⁵ and 49/17/28 mm Hg, respectively. As the patient refused surgery, we performed transcatheter coil embolization in the AV fistulas from the RCA ostium and the mid-LAD to the PA (Supplementary material, *Figure S1C* and *S1D*, *Videos S3* and *S4*), except for the left main AV fistula (Supplementary material, *Figure S1D*) due to its small size and technical difficulty in managing it. Multiple different coils were embolized with the Finecross microcatheter (Terumo Co., Tokyo, Japan): 2 Tornado fibered coils of 6 mm × 2 mm (Cook Medical, Bloomington, Indiana, United States), 1 Tornado coil of 7 mm × 2 mm, and 2 VortX fibered coils of 5 mm × 2 mm (Boston Scientific, Marlborough, Massachusetts, United States) from the RCA to the PA; 1 Tornado coil of 4 mm × 2 mm and 3 VortX coils of 4 mm × 2 mm

from the mid-LAD to the PA. After embolization, the hemodynamics improved (Qp/Qs, 1.1; PA pressure, 31/13/19 mm Hg). In the long-term follow-up, 9 years after the procedure, the patient remained asymptomatic, while follow-up cardiac computed tomography angiography and coronary angiography revealed a near-complete obstruction of the RCA ostium and the mid-LAD fistulas to the main PA, with a remaining small AV fistula from the left main coronary artery to the main PA. However, shunt flow was decreased (reduced contrast density in the PA as depicted in FIGURE 1C and 1D and in the Supplementary material, *Figure S1E* and *S1F*, *Videos S5* and *S6*) compared with that observed in the previous evaluation.

In most patients, transcatheter coil embolization of coronary AV fistulas is an acceptable alternative to surgery.^{1–4} Our case demonstrated that it is feasible, reduces shunt flow, and improves symptoms in multiple coronary AV fistulas that significantly affect hemodynamics. To our knowledge, this is the first report of long-term follow-up in a patient with coronary AV fistulas. Although small AV fistulas remained,⁵ reducing shunt flow could prevent their sequelae during long-term follow-up without complications.

SUPPLEMENTARY MATERIAL

Supplementary material is available at www.mp.pl/kardiologiapolska.

ARTICLE INFORMATION

CONFLICT OF INTEREST None declared.

Correspondence to:
Seung Hwan Han, MD,
PhD, Division of Cardiology,
Department of Internal Medicine,
Gachon University Gil Medical
Center, Incheon, Republic of Korea,
21, Namdong-daero, 774 beon-
gil, Namdong-gu, Incheon 21565,
phone: +82 32 460 3054,
email: shhan@gilhospital.com
Received: December 12, 2019.
Revision accepted:
January 17, 2020.
Published online:
January 20, 2020.
Kardiol Pol. 2020; 78 (3): 257–258
doi:10.33963/KP.15148
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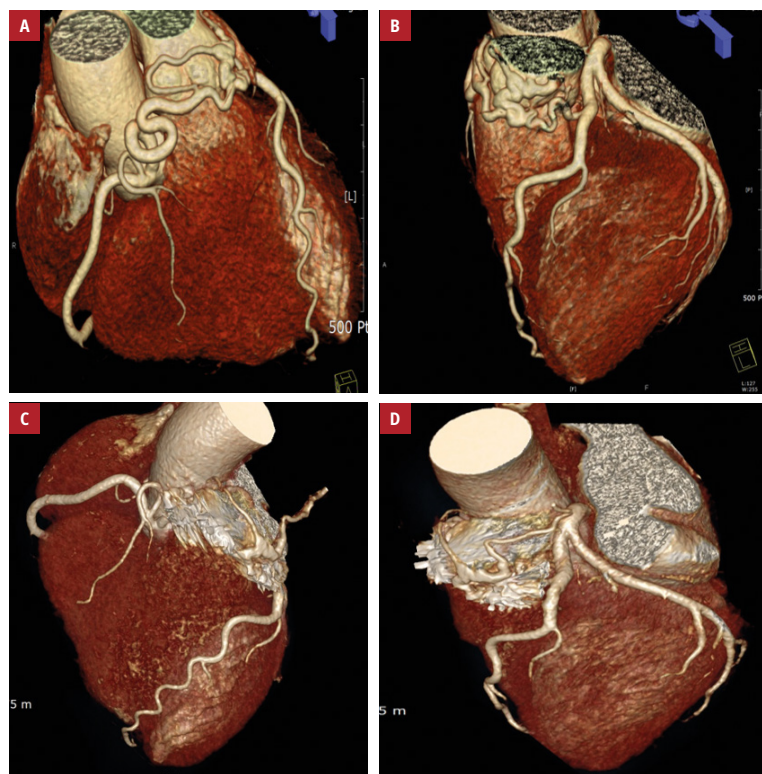


FIGURE 1 Cardiac computed tomography angiography showing: **A** – coronary arteriovenous (AV) fistulas from the right coronary artery ostium; **B** – multiple coronary AV fistulas communicating the left main coronary artery and the mid-left anterior descending artery with the main pulmonary artery (PA). After 9-year follow-up: **C** – no significant shunt flow from the right coronary artery to the PA; **D** – no significant shunt flow from the mid-left anterior descending artery to the PA and reduced shunt flow in the remaining small AV fistula from the left main coronary artery to the main PA

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HOW TO CITE Kim M, Byun SS, Riahl CS, et al. Transcatheter coil embolization of multiple symptomatic coronary arteriovenous fistulas: lessons from long-term follow-up. *Kardiol Pol.* 2020; 78: 257-258. doi:10.33963/KP.15148

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