

MINI-FOCUS ISSUE: INTERVENTIONAL CARDIOLOGY AND CORONARY PATHOLOGIES

BEGINNER

IMAGING VIGNETTE: CLINICAL VIGNETTE

Embolic Stroke Caused by Aortic Ruptured Plaque and Thrombus Visualized by Angioscopy



Yoshiharu Higuchi, MD,^a Atsushi Hirayama, MD,^a Sei Komatsu, MD,^b Kazuhisa Kodama, MD^b

ABSTRACT

Aortogenic embolization is among the major mechanisms of cryptogenic stroke. Angioscopic surveillance of the aortic wall clearly visualized the existence of thrombi and spontaneously ruptured plaques, which dynamically liberated embolic materials. (**Level of Difficulty: Beginner.**) (J Am Coll Cardiol Case Rep 2020;2:705-6) © 2020 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/>).

An 84-year-old woman was transferred for acute stroke. Five years ago, she underwent a graft replacement for an ascending aortic aneurysm. Brain magnetic resonance imaging showed acute cerebral infarction ([Supplemental Figure 1A](#)). No carotid and intracranial arteriosclerotic changes were observed ([Supplemental Figure 1B](#)). She had no history of atrial fibrillation. Transesophageal echocardiography revealed no intracardiac thrombus ([Supplemental Figure 1C](#)).

The brain-heart team in our institute diagnosed this as embolic stroke of undetermined source, and surveillance of aortic wall was performed for embolic source detection. We examined aortic (and prosthetic graft) wall from the ascending graft to the proximal descending aorta with a nonobstructive general angioscopy (1) ([Figure 1A](#)). Thrombi were found on the ascending graft ([Figure 1B](#), [Videos 1](#) and [2](#)), and spontaneously ruptured plaques were found on the arch and the proximal descending aorta ([Figure 1C](#), [Videos 3](#) and [4](#)). It was clearly visualized that the ruptured plaques incessantly liberated embolic materials including thrombi. These findings suggested that this embolic stroke of undetermined source case was caused by aortogenic mechanism. She was prescribed aspirin 100 mg and edoxaban 30 mg, and no recurrence of cerebral infarction has been observed.

Informed consent of the patient was obtained for this case.

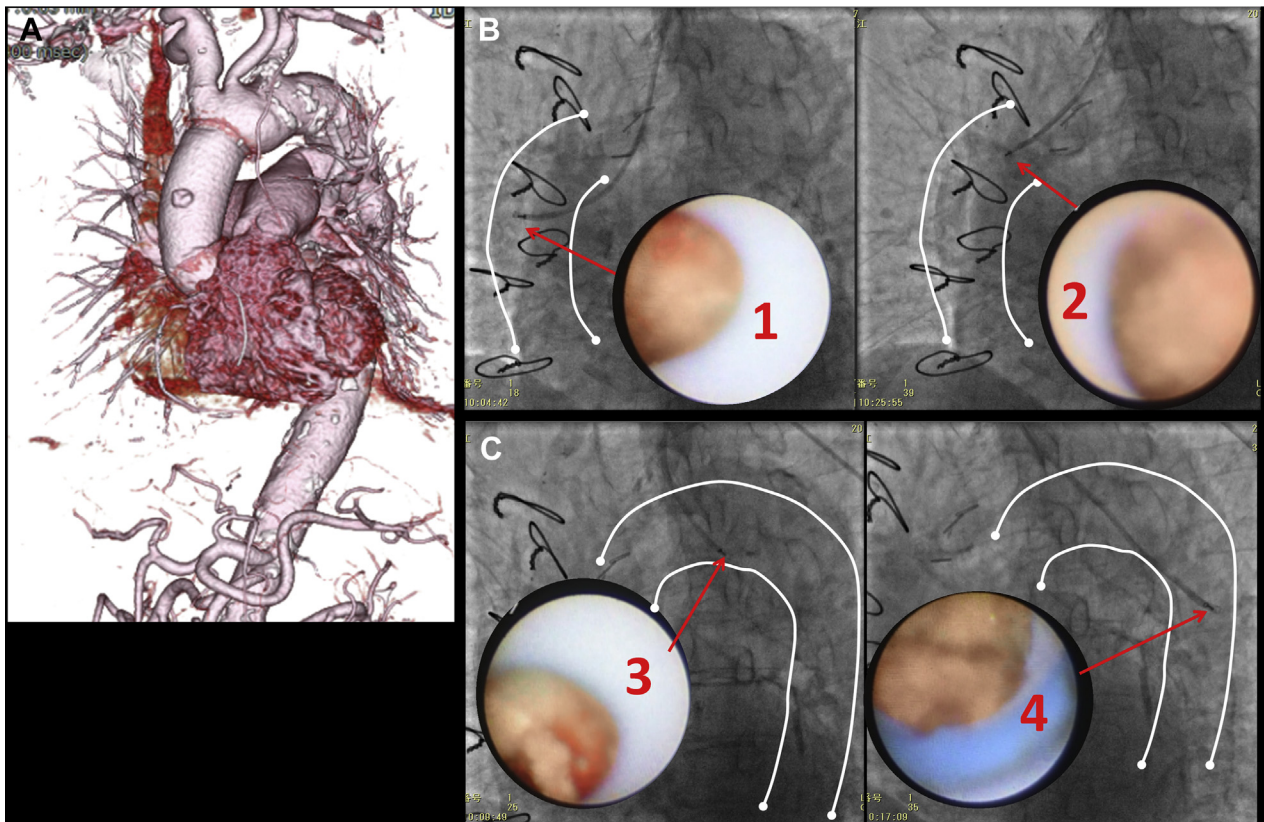
ADDRESS FOR CORRESPONDENCE: Dr. Yoshiharu Higuchi, 10-31 Kitayama-cho, Tennoji-ku, Osaka 5430035, Japan. E-mail: yhiguchi-ja@umin.net. Twitter: [@YHIGUCHI13](https://twitter.com/YHIGUCHI13).

From the ^aCardiovascular Division, Osaka Police Hospital, Osaka, Japan; and the ^bCardiovascular Center, Osaka Gyoumeikan Hospital, Osaka, Japan. Dr. Komatsu is a technical consultant for Nemoto Kyorindo Co. Ltd. Dr. Kodama is the President of Inter-tec Medicals, Co. Ltd. All other authors have reported that they have no relationships relevant to the contents of this paper to disclose.

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 *JACC: Case Reports* [author instructions page](#).

Manuscript received February 11, 2020; accepted February 20, 2020.

FIGURE 1 Angioscopic Observation



(A) Computed tomography angiography of ascending graft and aorta. **(B)** Thrombi were found in the ascending graft at lesions 1 and 2 (red arrows). Red thrombi were attached on the prosthetic graft wall (Videos 1 and 2). **(C)** Spontaneously ruptured plaques were found in the arch and proximal descending aorta at lesions 3 and 4 (red arrows). Embolic materials including thrombi were liberated from ruptured plaques clearly observed (Videos 3 and 4).

REFERENCE

1. Komatsu S, Yutani C, Ohara T, et al. Angioscopic evaluation of spontaneously ruptured aortic plaques. *J Am Coll Cardiol* 2018;71:2893-902.

KEY WORDS angioscopy, embolic stroke, ruptured plaques, thrombus

APPENDIX For supplemental figures and videos, see the online version of this paper.