

## IMAGING VIGNETTE

## INTERMEDIATE

## CLINICAL VIGNETTE

# Acute Myocardial Infarction Caused by Distal Embolization From a Proximal Ruptured Plaque



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## ABSTRACT

Generally, in acute myocardial infarction, the plaque rupture site is around the occluded site. In this case, coronary angiography effectively detected a rupture at a nonstenotic lesion, and the consequent thrombotic occlusion may lead to acute myocardial infarction apart from rupture. Aspirated plaques contained atheromatous materials, cholesterol crystals, and fibrin. (**Level of Difficulty: Intermediate.**) (J Am Coll Cardiol Case Rep 2020;2:33-4) © 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/>).

A 73-year-old man with acute myocardial infarction and 12-h long resting chest pain underwent coronary angiography, which revealed an occlusion in the middle portion of the right coronary artery ([Supplemental Figure 1](#)). The coronary flow was recovered after the initial aspiration. Severe stenosis was observed at the occluded site; following aspiration, percutaneous coronary stenting (Synergy stent 3.5×38 mm, Boston Scientific, Marlborough, Massachusetts) was successfully performed at this site ([Supplemental Figure 2](#)). The cholesterol crystals (CCs) in the aspirated blood, collected by the filter-paper rinse method, were scanned using polarized light microscopy ([1](#)). Free forms of CCs were identified, suggesting that plaque rupture may have caused the myocardial infarction ([Supplemental Figure 3](#)). To verify this, non-obstructive general angiography (NOGA) was performed, which revealed a puff-chandelier rupture, without stenosis, proximal to the right coronary artery; the rupture reflected against fiber light and appeared scattered like a puff ([Video 1](#)). This rupture is known to contain atheromatous materials, CCs, and fibrin ([1](#)). Red thrombi trapped in white intima were identified in the middle of the right coronary artery ([Video 1](#)); however, plaque rupture or erosion was not observed here. This suggested that thrombotic occlusion originating upstream may have caused coronary occlusion. Hematoxylin and eosin staining of the aspirated material from the puff-chandelier rupture revealed atheromatous materials, fibrin, and mixed thrombi ([Supplemental Figure 4](#)), suggesting that a proximal puff-chandelier rupture in the coronary artery, without stenosis, may cause distal

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Informed consent was obtained for this case.

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**ABBREVIATIONS  
AND ACRONYMS**

**CC** = cholesterol crystal

**NOGA** = nonobstructive  
general angioscopy

occlusion by distal embolism. Plaque rupture was medically followed without stenting because there was no significant stenosis. After 6 weeks of antiplatelet and intensive lipid-lowering therapies, follow-up coronary angiography revealed no stenosis at the plaque rupture site, and the stent was found to be intact. Plaque rupture appeared to have stabilized to an intensive yellow site with a rough surface.

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**REFERENCE**

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**KEY WORDS** acute coronary syndrome, cholesterol crystals, coronary artery, nonobstructive general angioscopy

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 **APPENDIX** For supplemental figures and a video, please see the online version of this paper.