Recanalized chronic coronary thrombus: unraveling a hazy coronary lesion by intravascular ultrasound

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Abstract: Hazy lesions in coronary angiography can often be a puzzle for the interventional cardiologist. Recanalized chronic coronary thrombus, although rare, is one of the potential diagnoses. Intracoronary imaging with intravascular ultrasound (IVUS) and optical coherence tomography (OCT) are tools that can guide to the correct diagnosis. We present the images of a case where IVUS was used to unravel such a lesion.

Keywords: Intravascular ultrasound (IVUS); recanalized thrombus

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Case

A 47-year-old man was referred to our center for elective coronary angiography +/– percutaneous coronary intervention (PCI). He initially presented with chest discomfort in strenuous exercise and underwent a stress cardiac magnetic resonance scan. The test showed a previous anterior infarct with viability and inducible ischemia in most of the anterior myocardial segments. Fourteen months earlier, he had experienced a prolonged episode of central chest pain at rest without seeking medical attention. His past medical history included previous tobacco use and hypercholesterolemia.

Coronary angiography, performed via the right radial artery, revealed a long hazy lesion with multiple linear filling defects in the proximal left anterior descending artery (LAD) with Thrombolysis in Myocardial Infarction (TIMI) flow grade 1 beyond it and competitive filling of the distal vessel via collaterals (*Figures 1*,*2*). The rest of the coronary arteries were free of significant disease. In order to assess the lesion further, we performed an intravascular ultrasound (IVUS) study using an Eagle Eye Platinum Catheter (Volcano, San Diego, USA). IVUS showed a coronary lumen divided into several cavities at the lesion level that converged into a single lumen proximally and distally (*Figure 3*). These findings are consistent with a previous thrombotic coronary artery occlusion, which recanalized forming multiple lumens (2). As patient had typical symptoms and a stress test that demonstrated significant inducible ischemia, PCI with a Xience PRO everolimus eluting stent (Abbott Vascular, USA) was performed (*Figures 4*,*5*). The patient was discharged home a few hours later and has been asymptomatic in 6 months follow up.

Angiographically hazy coronary lesions can be secondary to thrombus, coronary dissection or complex atheromatous plaque including calcification. Multiple linear filling defects in coronary angiography are commonly described in spontaneous coronary dissections (4,5), but as shown in our case they can be the result of a chronic recanalized thrombus. Intracoronary imaging with IVUS and/or optical coherence tomography (OCT) is a useful tool to unravel angiographically ambiguous disease and better characterize such lesions (6-8). OCT has 10 times higher resolution than IVUS, but its penetration depth in the vessel wall is limited between 0.5 and 1.5 mm (9). IVUS, more than 20 years from its introduction to clinical practice, can provide the needed information to delineate an ambiguous angiographic lesion. As shown in our case, IVUS clearly depicted the multiple lumens though the recanalized thrombus leading to the final diagnosis. Based on the IVUS images, a potential differential diagnosis would be partial thrombosis of the false lumen of a previous spontaneous chronic coronary dissection, but in that case a single true lumen should have

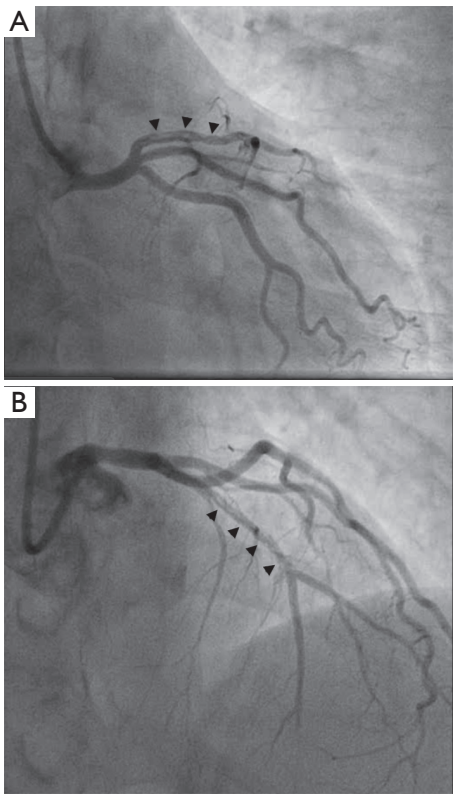

Figure 1 Coronary angiography showing hazy lesion in left anterior descending artery (LAD) (arrowheads).

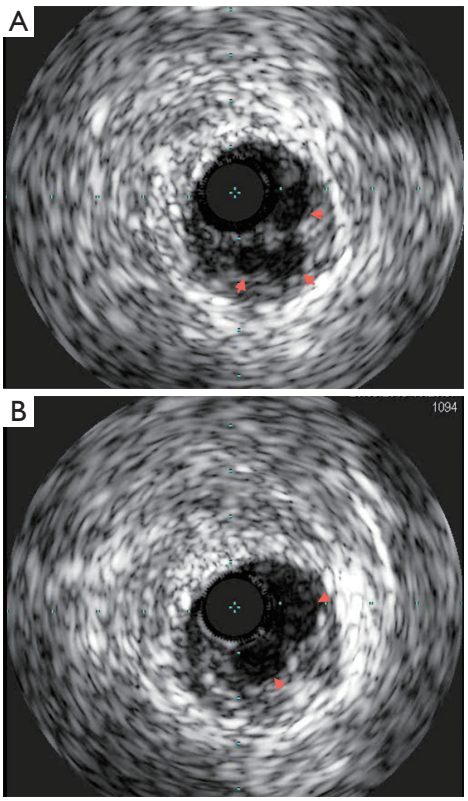

Figure 3 IVUS of the area of haziness showing multiple lumens (red arrowheads). IVUS, intravascular ultrasound.

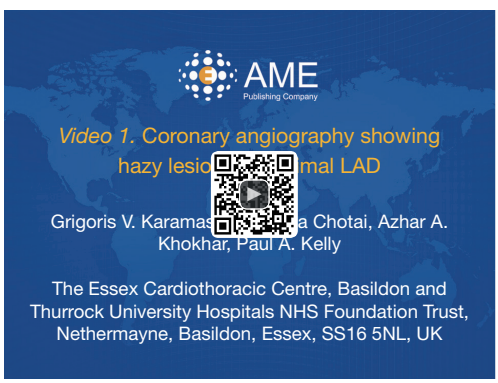

Figure 2 Coronary angiography showing hazy lesion in proximal left anterior descending artery (LAD) (1).
Available online: http://www.asvide.com/articles/841

Figure 4 Coronary angiography post PCI with DES. PCI, percutaneous coronary intervention; DES, drug eluting stent.

been identified.

Recanalization of chronic coronary thrombus has not been rare in histopathological studies (10). Coronary angiography, though, is an inadequate tool to establish the diagnosis, as its angiographic features (multiple linear filling defects or haziness) are not specific. With the expanding use of intracoronary imaging, it is more commonly recognized

Figure 5 Coronary angiography post PCI with DES. PCI, percutaneous coronary intervention; DES, drug eluting stent (3). Available online: http://www.asvide.com/articles/842

and reported (11,12).

The functional significant of a recanalized thrombotic occlusion is unclear and there have been reports where it proved not to cause any ischemia (13). In our case and in the majority of the reported cases though, blood flow through such a lesion is compromised and revascularization options should be considered (2).

Our case highlights the utility of IVUS in delineating ambiguous angiographically lesions and guiding decision-making. It also describes the imaging characteristics and clinical significance of the under-recognized entity of recanalized chronic coronary thrombosis.

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None.

Footnote

Conflicts of Interest: The authors have no conflicts of interest to declare.

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