Spontaneous Recanalization of Coronary Occlusion: Features with Optical Coherence Tomography

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Spontaneous recanalization of total coronary occlusions is occasionally found in patients undergoing catheterization. Establishing the accurate diagnosis on angiography can be difficult. We report the case of a 65-year-old man who was referred to our center for a coronary angiogram. His cardiovascular risk factors included hypertension, cigarette smoking, and diabetes. He was completely asymptomatic, with no relevant cardiac or non-cardiac history. The coronary angiogram indicated silent inferior myocardial ischemia, which was documented by scintigraphy. Cardiac enzymes were negative. The electrocardiogram was unremarkable. Trans-thoracic echocardiography showed normal left ventricular kinetics. The coronary angiogram showed an intermediate stenosis of the left anterior descending artery (LAD) and a complex lesion pattern in the first and second segments of the right coronary artery (RCA; Figure 1). Fourier domain optical coherence tomography (OCT) was performed in the RCA, and showed multiple channels (Figure 2A), as well as a very tight sub-occlusive stenosis of the true lumen (Figure 2B) with a minimal luminal area of 0.86 mm². This pattern is consistent with spontaneous recanalization of a thrombotic occlusion. The patient was successfully treated with percutaneous angioplasty and implantation of a drug-eluting stent to the RCA.

Silent myocardial ischemia, evidenced by noninvasive tests such as the electrocardiogram stress test, myocardial scintigraphy, or stress echocardiography, affects 20-50% of diabetic patients who have additional risk factors. Chest pain in spontaneous recanalization is not constant and might produce intermittent angina. In the present case, OCT, with its high resolution (10-15 µm), was able to access the lesion, identify the multiple recanalization channels, and to assess the severity of the residual true lumen stenosis, which was underestimated by angiography alone. No site of plaque rupture was identified.

References
Spontaneous Coronary Recanalization by OCT


Figure 1. Coronary angiogram showing irregular filling starting at the first segment and extending to the second segment of the right coronary artery (arrow).

Figure 2. Fourier domain optical coherence tomography of the right coronary artery. A: Multiple channels, with the optic probe being in the true lumen (TL), while the other channels constitute the false lumen (FL). B: Severe occlusive stenosis of the true lumen.