Coronary Artery Fenestration Guided by Optical Coherence Tomography Before Stenting

New Interventional Option in Rescue Management of Compressive Spontaneous Intramural Hematoma

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An 46-year-old woman, with a medical history of 7 hormonal stimulation attempts for in vitro fertilization in the past 2 years and moderate smoking, presented at the emergency department during the first hour of chest pain. ECG showed ST-segment–elevation myocardial infarction in anterior derivations. Emergency coronary angiography did not show atheroma but suggested a long intramural hematoma on left anterior descending coronary artery from the first septal branch, with Thrombolysis In Myocardial Infarction myocardial perfusion grade 1 flow (Figure [A]). Endocoronary optical coherence tomographic imaging confirmed intramural hematoma compressing true lumen without intimal rupture or thrombus (Figure [A’]). Delayed flow and persistent chest pain did not allow conservative therapeutic options. The fear of longitudinal hematoma extension by stenting led us to treat the lesion with a scoring balloon (x) to create a fenestration with multiple decompression sites prior stenting. Flow was restored (Figure [B]). Optical coherence tomographic imaging confirmed few entry sites (Figure [B']). True lumen diameter was improved with hematoma decompression. We used guidewire in true lumen to perform stenting (bioresorbable vascular scaffold; y), starting on proximal left anterior descending artery. Angiographic and endocoronary imaging showed perfect deployment and apposition of the bioresorbable vascular scaffold (Figure [C] and [C’]). We respected a persistent distal flap without flow delay. After bioresorbable vascular scaffold implantation, we observed a Thrombolysis In Myocardial Infarction grade 3 flow, ECG normalization, and chest pain resolution. Clinical outcomes were excellent with normal left ventricular function at 1 month.

Spontaneous coronary artery intramural hematoma and dissection seem to be the same entity, with a severe prognosis especially in young women. Endocoronary optical coherence tomographic imaging has already been shown to help diagnosis and management.1 Conservative option should be preferred in absence of ST-segment–elevation myocardial infarction.2 In other cases, rescue interventional treatment is mandatory but remains challenging: risks of hematoma extension because of balloon inflation or false lumen stenting in case of intimal rupture. We propose an original management based on scoring-balloon inflations guided by optical coherence tomography to decompress the hematoma to avoid longitudinal extension. This kind of balloon had already been successfully used in percutaneous coronary intervention-related intramural hematoma.3 Moreover, bioresorbable vascular scaffold implantation seems to be an interesting option in a nonatheromatous lesion in young women.4

Disclosures

None.

References


Key Words: coronary artery dissection, spontaneous myocardial infarction myocardial revascularization tomography, optical coherence
Figure. A, Baseline angiography showing left anterior descending (LAD) coronary artery hematoma. A′, Compressive hematoma confirmed by optical coherence tomographic (OCT) imaging, with total collapse of true lumen around the OCT fiber; (x) 3×15 mm scoring-balloon inflation (AngioSculpt, PTCA Scoring Balloon Catheter, Biotronik, Bulach, Switzerland). B, Coronary artery dissection created by scoring-balloon restoring coronary flow. B′, OCT imaging shows entry sites created by scoring balloon and improved true lumen; (y) 3.5×28 mm bioresorbable vascular scaffold (BVS) implantation on proximal LAD artery (Absorb, Abbott Vascular, Santa Clara, CA). C, Final angiography showing restored diameter and Thrombolysis In Myocardial Infarction grade 3 flow. C′, OCT pullback confirms a perfect BVS deployment and apposition, a nonobstructive and limited persistent distal dissection.
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