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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A 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 optical coherence tomography

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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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