A 32-year-old man presented with acute chest pain and anterior ST-segment elevation on electrocardiography after rowing a surfboat. He was a smoker, overweight with a body mass index of 28, denied any illicit drug use, and had no other significant cardiovascular risk factors. He proceeded to primary percutaneous coronary intervention. Angiography demonstrated large caliber left coronary vessels, with a prominent filling defect at the floor of the proximal left anterior descending coronary artery (LAD) and good flow distally (Fig. 1A). The rest of the coronary arterial system was normal.
(Fig. 1B). After passing a coronary wire into the distal LAD, multiple attempts at aspiration thrombectomy were unsuccessful, and aspiration of the thrombus was instead achieved by biasing the wire down the septal perforating branch (Fig. 1C).

In a young patient with an acute coronary occlusion and otherwise normal coronary arteries, the diagnostic considerations include ruptured atherosclerotic plaque or embolism. Therefore, optical coherence tomography (OCT), a high-resolution intravascular imaging modality that allows the accurate evaluation of coronary vessel wall, was used in this case to look for coronary plaque rupture. One of the limitations of OCT is its limited depth of field in large caliber vessels, such as the proximal LAD in this case (Fig. 1D). However, wire biasing down the septal perforating branch allowed the OCT catheter to hug the floor of the LAD where the filling defect was originally seen. This maneuver facilitated visualization of a ruptured plaque (Figs. 1E and 1F).

Angiography is limited in evaluating plaque morphology. Optical coherence tomography has a resolution of 10 to 20 μm (an order of magnitude better than intravascular ultrasound) (1,2), allowing assessment of the surface cap, but has the drawback of lower tissue depth of penetration (2 to 3 mm vs. 10 mm for intravascular ultrasound) (3). This has obvious implications for vessels >3 mm in caliber. Wire bias represents an elegant strategy in overcoming this relative limitation, as illustrated by this case.

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