

Coronary Perforation During ELCA for a Thrombotic Ostial LCx Lesion Successfully Treated with a Covered Stent

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A 55-year-old man presented with intermittent chest pain at rest. Electrocardiography demonstrated ST-segment depression in leads II, III, aVF, V5, and V6, and high-sensitivity troponin I was elevated. He was diagnosed with non-ST-segment elevation myocardial infarction. Since his symptoms had disappeared and he was hemodynamically stable at admission, elective coronary angiography was performed on hospital day 2, which revealed 90% stenosis with a thrombotic filling defect at the ostium of the left circumflex coronary artery (LCx). Unfractionated heparin was continued, and percutaneous coronary intervention (PCI) was performed on hospital day 6. A right transradial approach was established using a 6/7-Fr Glidesheath Slender and a 7-Fr SPB 3.5 guiding catheter. Initial optical frequency domain imaging demonstrated diffuse fibrous plaque and thrombus at the LCx ostium. Because stentless strategy was initially intended, balloon angioplasty was performed using a 3.25-mm scoring balloon. The thrombus persisted; therefore, prolonged inflation was attempted using a 3.5-mm perfusion balloon and a 3.5-mm scoring balloon. Despite these procedures, adequate luminal enlargement was not achieved. Intravascular ultrasound (IVUS) demonstrated a residual mobile thrombus. Aspiration using a Thrombuster Pro SL catheter failed to retrieve visible thrombus and did not alter the IVUS findings. Excimer laser coronary atherectomy was subsequently performed from the distal to the proximal segment. Angiography after laser atherectomy using a 1.7-mm laser catheter revealed coronary perforation. IVUS demonstrated disruption of the carina-side vessel wall within the LCx ostial lesion, a few millimeters distal to the left main bifurcation. The LCx ostium was fluoroscopically marked using the IVUS catheter. The short segment between the bifurcation and the perforation provided a viable landing zone, allowing a 3.5 × 20-mm PK Papyrus covered stent to be deployed at the LCx ostium. The perforation was successfully sealed without residual stenosis. No pericardial effusion developed, and the patient was discharged four days after PCI. ELCA in angulated bifurcation lesions requires particular caution because of the increased risk of coronary perforation. When perforation occurs near a major bifurcation, intravascular imaging may facilitate precise identification of the vessel injury and appropriate covered-stent placement, followed by confirmation of complete sealing.