# The ELCA contributed to identifying the cause of myocardial infarction

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A 78-year-old nonsmoking man felt sudden chest pain while ascending stairs and was transferred to our hospital. He had several coronary risk factors: hypertension, hyperlipidemia, and obesity. The serum Troponin I level was mildly elevated, but the chest discomfort had reduced at the emergency department. We suspected myocardial infarction (MI); however, the electrocardiography revealed no ST elevation, and we decided to perform elective coronary angiography (CAG). Coronary computed tomographic angiography showed the stenosis of the left anterior descending artery (segment 7). At the same site, CAG showed TIMI 1 grade flow as the result of 99% stenosis, and collateral blood flow from the right coronary artery. Angioscopy revealed red thrombi and white coronary endothelium near the culprit region, and these findings are suggestive of coronary artery embolism as the reason for MI. However, OCT imaging after the combination treatment of thrombus aspiration and ablation with ELCA 0.9 mm visualized a cavity suspected of plaque rupture. The images led us to diagnose that the pathophysiology of the MI was thrombus occlusion caused by plaque rupture.

The frequency of MI caused by coronary artery embolism is reported to be about 3 percent. In this case, the patient was complicated with atrial fibrillation, and no other significant stenosis in his coronary artery. Based on these background factors and previous reports, the coronary artery embolism was initially suspected as the cause of MI. However, OCT imaging after both procedures, including ELCA ablation and thrombus aspiration, could detect the cavity suspected of plaque rupture. It is reported that OCT imaging after both thrombus aspiration and ablation with ELCA can identify erosion or a cavity of plaque rupture in the intracoronary artery more precisely than after only thrombus aspiration. In cases of MI, where the amount of intracoronary thrombus is large, such as our case, the combination procedure of thrombus aspiration and ELCA ablation may help elucidate the pathophysiology.