

Images in
Cardiovascular Medicine



Optical Coherence Tomography Findings of Non-ST Elevation Myocardial Infarction with Multivessel Disease

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A 48-year-old man with a history of current smoking presented to our department with sudden-onset chest pain at rest. Elevated high sensitivity troponin level led to urgent coronary angiography (CAG). CAG revealed intermediate stenosis with multiple linear filling defects in the mid right coronary artery (RCA) (**Figure 1A**). Cross-sectional (**Figure 1B-1D**) and longitudinal (**Figure 1F**) optical coherence tomography (OCT) demonstrated a honeycomb-like structure with multiple cavities of various size separated by tissue with high-signal intensity (**Supplementary Video 1**). Three-dimensional OCT also showed multiple cavities communicating with true lumen (**Figure 1E**, asterisks) and we concluded that this represented recanalized thrombus. Regarding the left anterior descending artery (LAD) lesion, CAG revealed severe stenosis in the proximal LAD (**Figure 1G**). OCT demonstrated thrombus, both protruding (**Figure 1K**, arrow) and laminar (**Figure 1H, 1I, and 1L**, arrowheads) with underlying heterogenous plaque without evidence of disruption, suggestive of plaque erosion, and minimal lumen area of 2.24 mm² (**Figure 1J**) (**Supplementary Video 2**). Therefore, based on OCT findings, we concluded that the proximal LAD was more relevant to the culprit lesion. Successful percutaneous coronary intervention was achieved with a 3.5×32 mm novolimus-eluting stent in the RCA and 4.0×23 mm everolimus-eluting stent in the LAD.

CAG in patients presenting with non-ST elevation acute coronary syndrome can pose diagnostic challenges (>10% patients have multiple culprits and >30% no identifiable culprit).¹⁾ We report the invaluable role that intracoronary imaging can play in delineating the underlying substrate for acute coronary syndrome, as highlighted in the recent expert consensus.²⁾

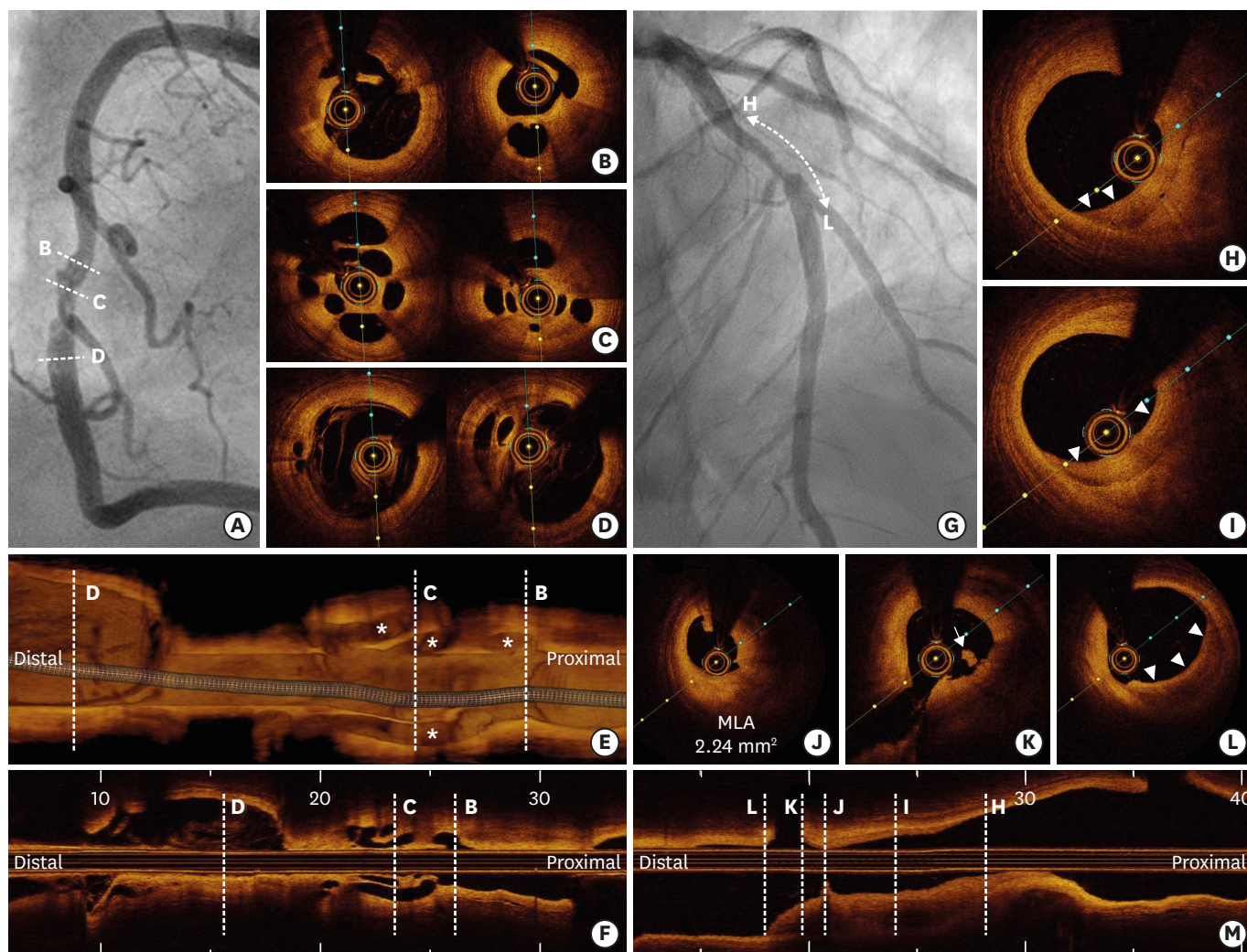


Figure 1. (A) Diagnostic CAG demonstrating multiple linear filling defects in the mid-RCA. (B-D, F) Cross-sectional and longitudinal OCT imaging of the RCA showing a honeycomb-like structure with multiple cavities of various sizes. (E) Three-dimensional OCT imaging demonstrating multiple cavities (asterisks). (G) CAG demonstrating severe stenosis in the proximal LAD. (H-M) Cross-sectional and longitudinal OCT imaging of the LAD showing plaque erosion with intraluminal thrombus.

CAG = coronary angiography; LAD = left anterior descending artery; OCT = optical coherence tomography; RCA = right coronary artery.

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Conflict of Interest
 The authors have no financial conflicts of interest.

SUPPLEMENTARY MATERIALS

Supplementary Video 1

Pre-interventional optical coherence tomography in the right coronary artery.

[Click here to view](#)

Supplementary Video 2

Pre-interventional optical coherence tomography in the left anterior descending artery.

[Click here to view](#)

Author Contributions

Conceptualization: Kim Y; Data curation: Kim Y, Park SH, Ahn Y; Formal analysis: Kim Y; Investigation: Kim MC, Ahn Y; Supervision: Hong YJ, Jeong MH; Validation: Hong YJ, Jeong MH; Writing - original draft: Kim Y; Writing - review & editing: Johnson TW, Kim JH, Hong YJ, Jeong MH, Ahn Y.

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