

Images in Cardiovascular Medicine



Optical Coherence Tomography: Defined Plaque Erosion after Removal of a Coronary Guidewire

Sang-Woong Choi , MD, Seung-Ho Hur , MD, PhD, Cheol Hyun Lee , MD, PhD,
Yun-Kyeong Cho , MD, PhD, Hyuck-Jun Yoon , MD, PhD,
Chang-Wook Nam , MD, PhD, and Kwon-Bae Kim , MD, PhD

Division of Cardiology, Keimyung University Dongsan Medical Center, Daegu, Korea

OPEN ACCESS

Received: Mar 11, 2019

Revised: Jun 5, 2019

Accepted: Jul 9, 2019

Correspondence to

Seung-Ho Hur, MD, PhD

Division of Cardiology, Department of Internal
Medicine, Keimyung University Dongsan
Medical Center, 56, Dalseong-ro, Jung-gu,
Daegu 42601, Korea.
E-mail: shur@dsmc.or.kr

Copyright © 2019. The Korean Society of
Cardiology

This is an Open Access article distributed
under the terms of the Creative Commons
Attribution Non-Commercial License (<https://creativecommons.org/licenses/by-nc/4.0>)
which permits unrestricted noncommercial
use, distribution, and reproduction in any
medium, provided the original work is properly
cited.

ORCID iDs

Sang-Woong Choi

<https://orcid.org/0000-0002-7811-4812>

Seung-Ho Hur

<https://orcid.org/0000-0002-3895-1915>

Cheol Hyun Lee

<https://orcid.org/0000-0003-4203-1457>

Yun-Kyeong Cho

<https://orcid.org/0000-0002-0221-0971>

Hyuck-Jun Yoon

<https://orcid.org/0000-0002-0563-7014>

Chang-Wook Nam

<https://orcid.org/0000-0002-3370-5774>

Kwon-Bae Kim

<https://orcid.org/0000-0003-0520-8321>

A 45-years-old male patient presented with a non-ST elevation myocardial infarction (MI). Coronary angiography revealed only mild luminal stenosis in the middle portion of the left anterior descending artery (Figure 1). For evaluation of the culprit lesion of an acute MI (AMI), intravascular optical coherence tomography (OCT) was performed (Figure 2A, Supplementary Video 1). A few cross-sectional OCT images at angiographically mildly stenotic segments showed a suspicious presence of an intracoronary thrombus adjacent to the acoustic shadow by the guidewire artifact (Figure 2B-F), leading to an undetermined cause of the pathomechanism of the AMI. Therefore, the guidewire was removed from the OCT catheter system for acquisition of clear OCT images at the thrombus-contained site and an automatic pullback was performed without the intracoronary guidewire (Figure 2A', Supplementary Video 2). The following OCT images confirmed the presence of an irregular intraluminal thrombus that was attached to the intact fibrous cap, highly suggestive of an OCT-defined plaque erosion (Figure 2B'-F').

OCT is useful to evaluate the pathogenesis of angiographically ambiguous lesions in patients with an AMI.¹⁾ When intraluminal abnormal findings including a plaque erosion or rupture

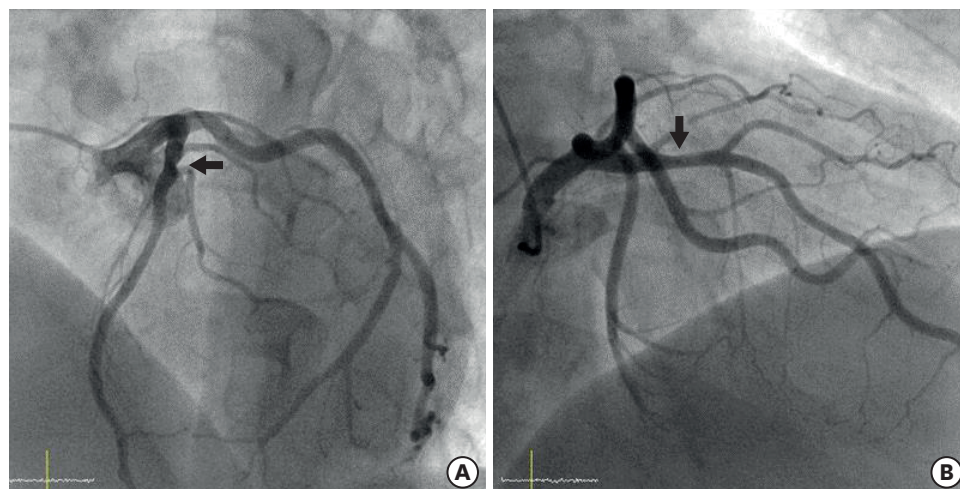


Figure 1. Coronary angiography images. The black arrows indicate a mild stenotic lesion in the middle portion of left anterior descending coronary artery in the left anterior oblique cranial projection (A) and right anterior oblique cranial projection (B).

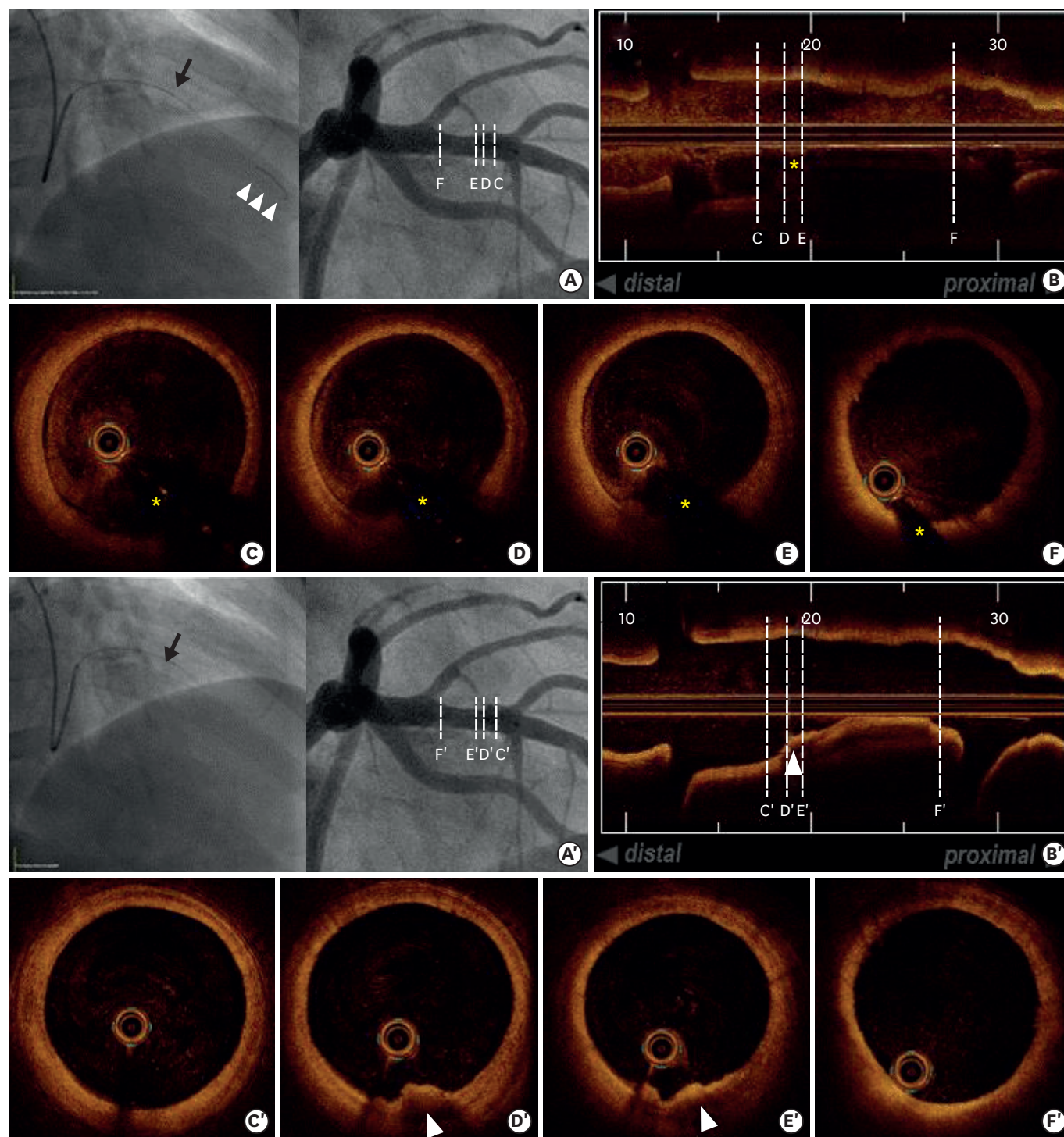


Figure 2. OCT images with and without a guidewire. (A and A') Intravascular OCT (black arrow) was performed in the LAD with a guidewire (white arrowheads, **Supplementary Video 1**) and without a guidewire (**Supplementary Video 2**). (B) The longitudinal view of the OCT with a guidewire exhibited guidewire artifact (yellow asterisks). (B') The longitudinal view of the OCT without a guidewire revealed the plaque erosion (white arrowheads). (C-F) OCT revealed the suspicious presence of an intracoronary thrombus adjacent to the acoustic shadow from the guidewire artifact (yellow asterisk) from 4 to 7 o'clock. (C'-F') After removal of the guidewire, the corresponding OCT images revealed the plaque erosion (white arrowhead) with an attached thrombus overlying an intact fibrous cap. OCT = optical coherence tomography.

Conflict of Interest

The authors have no financial conflicts of interest.

Author Contributions

Supervision: Hur SH, Lee CH, Cho YK, Yoon HJ, Nam CW, Kim KB; Writing - original draft: Choi SW.

are focal and located adjacent to or behind the acoustic shadow of the guidewire artifact, it may not be possible to evaluate the pathogenesis of the AMI. In that circumstance, the removal of the guidewire from the OCT catheter system can allow the acquisition of clear OCT images that enables an accurate insight into the pathogenesis in selected patients with an AMI. It could be a safe option in proximal lesion without tortuous segment, tight stenosis and heavy calcification to avoid the risk of catheter trapping or vessel injury.

ACKNOWLEDGEMENTS

We thank Mr. John Martin for his linguistic assistance.

SUPPLEMENTARY MATERIALS

Supplementary Video 1

Optical coherence tomography (OCT) with guidewire. Automatically OCT pull-back was performed with guidewire due to detecting for the culprit lesion of an acute myocardial infarction.

[Click here to view](#)

Supplementary Video 2

Optical coherence tomography (OCT) without guidewire. OCT pull-back was performed by hand without guidewire because of the guidewire artifact.

[Click here to view](#)

REFERENCES

1. Kubo T, Imanishi T, Takarada S, et al. Assessment of culprit lesion morphology in acute myocardial infarction: ability of optical coherence tomography compared with intravascular ultrasound and coronary angiography. *J Am Coll Cardiol* 2007;50:933-9.
[PUBMED](#) | [CROSSREF](#)