





When in doubt, just image the plaque!

 Aleksandar Blivajs,
 Irzal Hadžibegović*
 Ivana Jurin,
 Šime Manola,

Dubrava University Hospital,
Zagreb, Croatia

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***ADDRESS FOR CORRESPONDENCE:** Aleksandar Blivajs, Klinička bolnica Dubrava, Avenija Gojka Šuška 6, HR-10000 Zagreb, Croatia. / Phone: +385-98-1857-256 / E-mail: ablivajs@gmail.com

ORCID: Aleksandar Blivajs, <https://orcid.org/0000-0003-3404-3837> • Irzal Hadžibegović, <https://orcid.org/0000-0002-3768-9134>
Ivana Jurin, <https://orcid.org/0000-0002-2637-9691> • Šime Manola, <https://orcid.org/0000-0001-6444-2674>

Introduction: Intravascular imaging helps guide primary coronary intervention (PCI) strategy by providing detailed visualization of plaque morphology, enabling precise lesion assessment and optimizing stent deployment.¹⁻³

Case report: We present a case of a 59-years-old patient with acute coronary syndrome (ACS) admitted from a referral hospital where he was hospitalized because of typical angina, with no ischemic T wave abnormality and positive high sensitivity troponin levels. Echocardiography revealed mild segmental hypokinesis of the mid and distal septum with preserved ejection fraction and no valvular pathology. He was treated with aspirin and fondaparinux. Invasive angiography performed 48 hours after symptom onset showed no irregularities of the right coronary artery and circumflex artery, however, there was a non-significant plaque of the proximal left anterior descending artery (LAD) causing a 40% narrowing of the artery with no angiographic signs of plaque instability. Intravascular imaging of the LAD was performed using optical coherence tomography (OCT), which showed characteristics of a thin-cap fibroatheroma (TCFA) with no signs of plaque rupture or thrombus. Because of the clinical presentation, we chose to proceed with PCI using a drug-coated balloon strategy. After lesion preparation with a non compliant 1:1 ratio 3.0x20 mm balloon, a paclitaxel-coated balloon was deployed with optimal result.

Conclusion: In recent years, advances in intravascular imaging have helped better characterize plaque morphology. Thanks to its high spatial resolution, OCT is a superior tool in assessing plaque structure as opposed to IVUS, although it has its own constraints in discerning lipid-rich plaques from fibrous. However, exact measuring of lipid caps is possible using OCT, and in conjunction with new technology, like Intracoronary near-infrared spectroscopy (NIRS), plaque morphology can be highly understood. TCFA plaques have been established as high-risk features for the development of ACS. Treatment of such lesions with PCI and/or optimal medical therapy (OMT) has recently come into focus. The PREVENT trial showed that PCI of non-obstructive lesions with OCT confirmed high-risk features was superior to OMT alone. On the other hand, the EROSION trial showed that conservative treatment with no PCI of plaque erosions that present with ACS can be a safe strategy. This case highlights the importance of intravascular imaging-guided angiography to better understand and treat patients with high-risk plaque features.

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LITERATURE

- Emfietzoglou M, Mavrogiannis MC, García-García HM, Stamatelopoulos K, Kanakakis I, Papafaklis MI. Current Toolset in Predicting Acute Coronary Thrombotic Events: The "Vulnerable Plaque" in a "Vulnerable Patient" Concept. *Life (Basel)*. 2023 Mar 4;13(3):696. <https://doi.org/10.3390/life13030696>
- Ahn JM, Kang DY, Lee PH, Ahn YK, Kim WJ, Nam CW, et al; PREVENT Investigators. Preventive PCI or medical therapy alone for vulnerable atherosclerotic coronary plaque: Rationale and design of the randomized, controlled PREVENT trial. *Am Heart J*. 2023 Oct;264:83-96. <https://doi.org/10.1016/j.ahj.2023.05.017>
- Xing L, Yamamoto E, Sugiyama T, Jia H, Ma L, Hu S, et al. EROSION Study (Effective Anti-Thrombotic Therapy Without Stenting: Intravascular Optical Coherence Tomography-Based Management in Plaque Erosion): A 1-Year Follow-Up Report. *Circ Cardiovasc Interv*. 2017 Dec;10(12):e005860. <https://doi.org/10.1161/CIRCINTERVENTIONS.117.005860>