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Very late stent thrombosis derived from thin-cap neoatheroma and fibroatheroma with plaque rupture assessed by optical coherence tomography

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A 49-year-old woman presented with sudden onset chest pain, at rest, evident of ST-segment elevation in the anterior leads of a 12-lead electrocardiogram. She received stent implantation with a 3.5 × 23 mm sirolimus-eluting stent at the proximal portion of left anterior descending artery (LAD) 10 years ago. Dual antiplatelet therapy, however, was discontinued 3 years ago. Urgent coronary angiography demonstrated a near total occlusion at the proximal portion of LAD, which was the same segment of the previous stent implantation (Fig. 1A). Optical coherence tomography (**Supplementary**

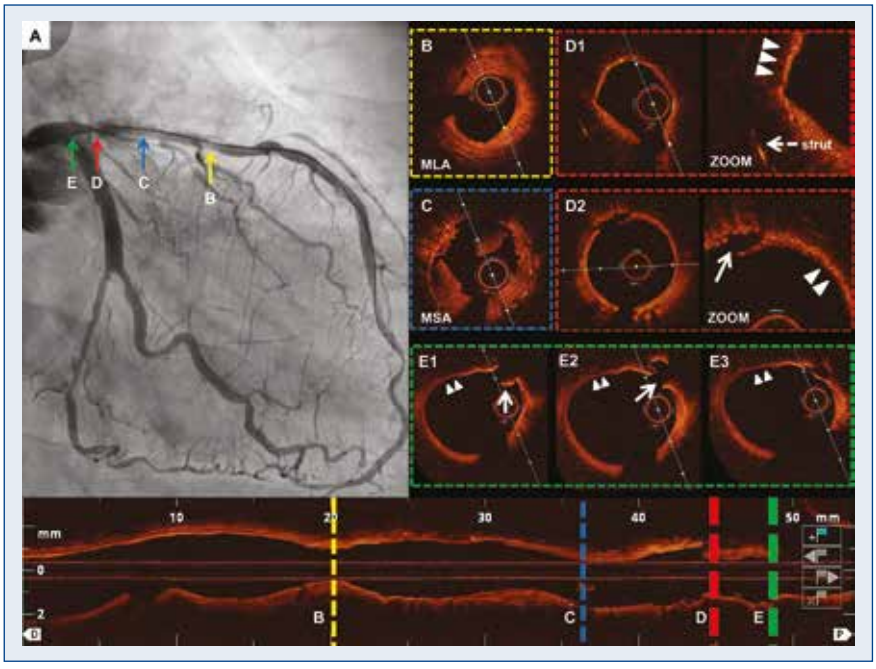

Figure 1. A. Angiographic assessment demonstrating severe stenosis in the proximal portion of implanted stent and diffuse haziness in in-stent area; **B.** Optical coherence tomography (OCT) assessment demonstrating minimal lumen area of 2.17 mm^2 with fibrous plaque; **C.** OCT cross-section demonstrating minimal stent area of 5.71 mm^2 in in-stent; **D.** OCT demonstrating thin-cap neoatheroma (arrowheads in D1 and D2) and plaque rupture (arrow in D2); **E.** OCT demonstrating thin-cap fibroatheroma (arrowheads in E1, E2, and E3) with intraluminal thrombus (arrow in E1) and ruptured plaque (arrow in E2).

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Video 1 — see journal website) demonstrated that a minimal lumen area of 2.17 mm^2 in de-novo lesion (Fig. 1B) and minimal stent area of 5.71 mm^2 in the in-stent area (Fig. 1C), thin-cap neoatheroma (Fig. 1, D1), and neoatherosclerotic plaque rupture (Fig. 1, D2) upstream of the culprit site. Furthermore, optical coherence tomography showed thin-cap fibroatheroma with plaque rupture of the de novo lesion in the left main bifurcation area (Fig. 1, E1, E2, E3). Incomplete strut apposition and uncovered struts were not detected. The optical coherence tomography assessment led to another predilatation with a 3.5 × 10 mm noncompliant balloon, and a 3.25 × 38 mm everolimus-eluting stent implantation. Postdilatation was achieved with a 3.5 × × 10 mm noncomplicant balloon. Repeated optical coherence tomography assessment demonstrated excellent stent expansion and good strut apposition without edge dissection.

Optical coherence tomography provided high-resolution (10 μm) which enabled detection of a thin fibrous cap covering the lipid core (< 65 μm) and allowed characterization of tissue components of atherosclerotic plaques. This case highlights the benefit that optical coherence tomography offers in providing interventional strategies for very late stent thrombosis.

Conflict of interest: None declared