

## IMAGES IN INTERVENTION

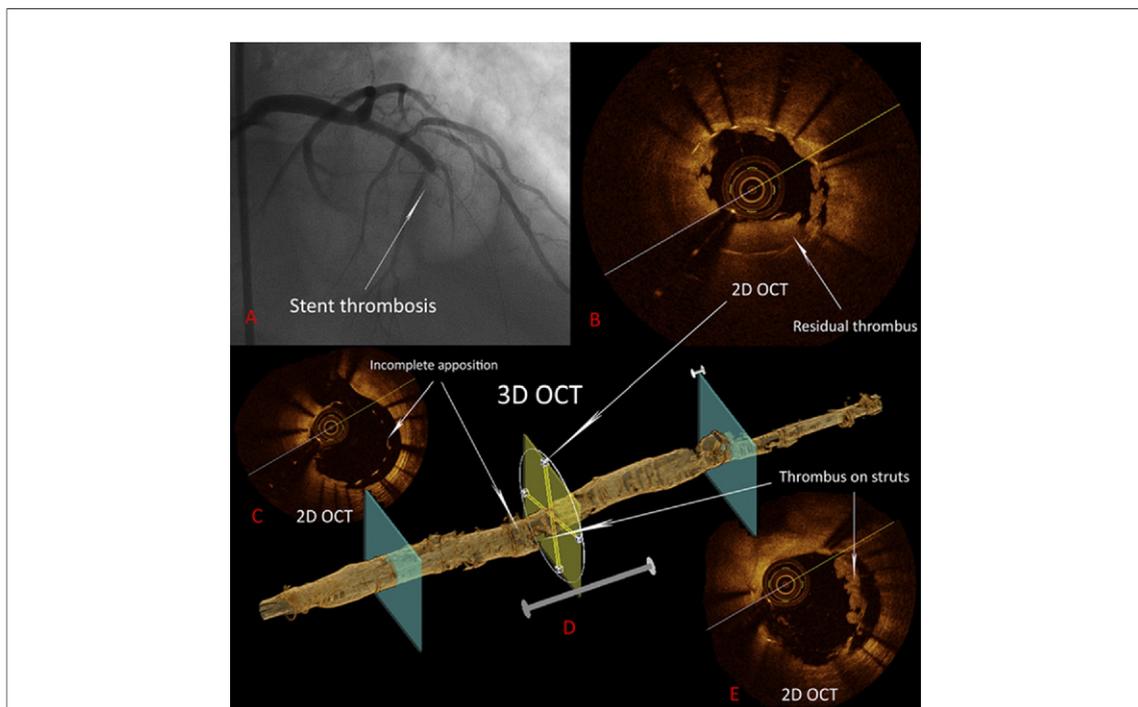
# 3-Dimensional Optical Coherence Tomography Imaging in Early Coronary Stent Thrombosis

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A 45-year-old man presented to our catheterization laboratory with an acute anterior ST-segment elevation myocardial infarction caused by a proximal occlusion of the left descending artery. Two

bare-metal stents were implanted with good angiographic results. Besides aspirin and clopidogrel, the patient was treated with abciximab intravenously because of the large thrombus load.



**Figure 1. 3D OCT ST**

(A) Coronary angiography: stent thrombosis (ST). (B) 2-dimensional (2D) optical coherence tomography (OCT): ST with residual thrombus on stent struts. (C) 2D OCT: undersized stent with incomplete stent apposition. (D) 3-dimensional (3D) OCT: in the middle, a cavity is seen that correlates to E at 2D OCT. The cavity is caused by laser reflections on the thrombus attached to the incomplete malapposed stent struts. (E) 2D OCT: thrombus on stent struts.

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Eight days later, the patient re-experienced severe chest pain, and emergent coronary angiography showed an acute thrombotic occlusion of the recently implanted bare-metal stents. Optical coherence tomography (OCT) was performed after coronary flow was re-established by thrombo-suction. The OCT pullback revealed the underlying patho-physiological mechanism that may have caused the subacute stent thrombosis: severe undersizing of the implanted bare-metal stents with a large residual thrombus on the naked incomplete apposed stent struts (Fig. 1). After OCT pull-back, repeated high-pressure balloon inflations were performed resulting in Thrombolysis In Myocardial Infarction flow grade 3.

Three-dimensional (3D) OCT is a novel technique enabling 3D imaging of the intracoronary lumen. In the present case, the 3D image shows a central cavity, which correlates to thrombus on the incomplete apposed stent struts visualized on 2-dimensional OCT. In the near future, 3D OCT may be a useful tool to guide complex coronary interventions. Further research is imperative to assess the clinical relevance of 3D OCT.

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