CARDIOVASCULAR FLASHLIGHT

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# Three-dimensional visualization of intracoronary thrombus during stent implantation using the second generation, Fourier domain optical coherence tomography

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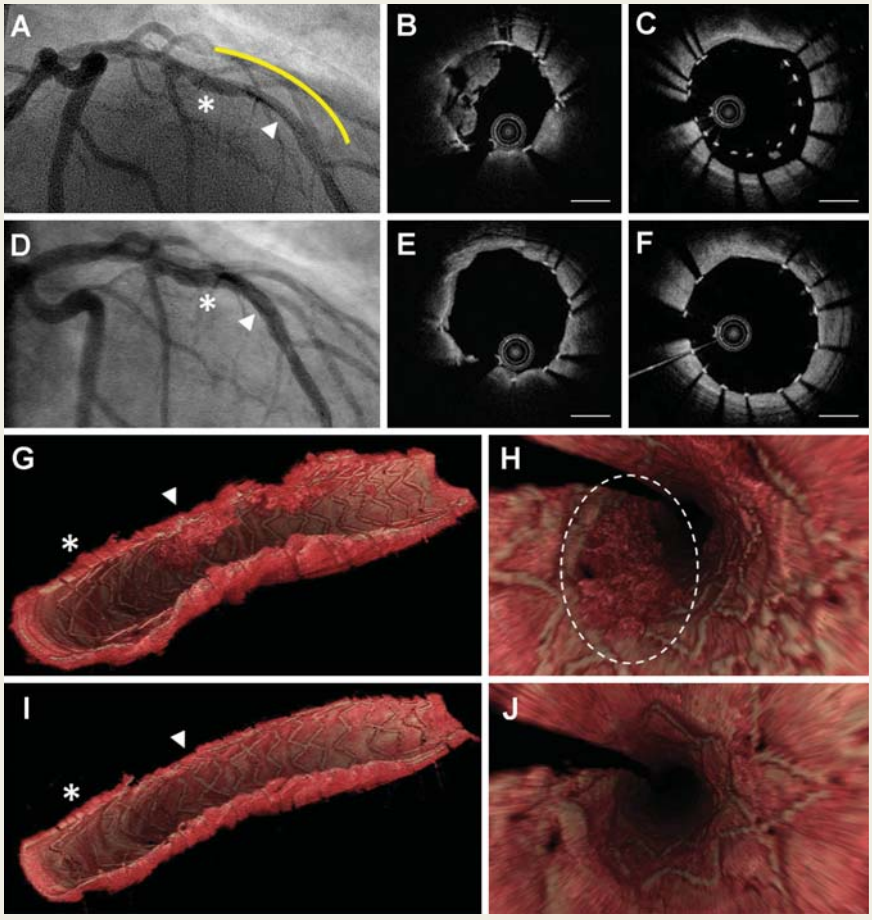


A 64-year-old man with dyslipidaemia, hypertension, and diabetes mellitus underwent percutaneous coronary intervention of the left anterior descending coronary artery because of post-infarct angina. After pre-dilatation, a 3.0/28 mm drug eluting stent was deployed (*Panel A*). A coronary segment was imaged using Fourier domain optical coherence tomography (FD-OCT; Terumo Corp. Tokyo, Japan) with a total flush volume of 16 mL (motorized pullback 20 mm/s, frame rate 160 fr/s). Intraluminal tissue with low attenuation and irregular surface, indicative of thrombus, was clearly visible in the mid-portion of the stent (*Panel B*). A malapposition was revealed at the proximal stent edge (*Panel C*). Based on these OCT findings, that were missed by angiography, the patient received a glycoprotein IIb/IIIa inhibitor, and a post-dilatation was performed using a 3.5 mm balloon at 18 atm. Subsequent angiography showed remarkable additional lumen gain. Intracoronary FD-OCT was able to demonstrate complete strut apposition over the whole stent length and resolution of the intraluminal thrombi (*Panels E* and *F*). Three-dimensional reconstruction of the OCT images (INTAGE Realia, KGT, Tokyo, Japan) allows the visualization of the rather complex anatomy of this stented segment in such a way that it is easily and fast comprehensible at a glance. Strut malapposition and intraluminal thrombus are clearly discernable, and their spatial relationship is well visualized (*Panels G* and *H*), as well as the impact of the therapeutic regimen (*Panels I* and *J*). The patient experienced no procedure-related complication and was discharged within 24 h after the procedure on dual antiplatelet therapy.

Panels show coronary angiography, optical coherence tomography (OCT) and three dimensional OCT immediately after stenting (*Panels A–C*, *G*, *H*) and after post dilatation (*Panels D–F*, *I*, *J*). The yellow line indicates the stented segment. Asterisk and triangle indicate corresponding sites, respectively. Visual direction of virtual endoscopy (*Panels H*, *J*) is from proximal site to distal site. Dotted circle indicates intraluminal thrombus in stent. Bar = 1 mm.