A 65-year-old man underwent cardiac catheterization for unstable angina pectoris. The coronary angiogram revealed a significant stenosis of the right coronary artery, which was treated with a 3.0 × 16 mm NIR stent. A postintervention coronary angiogram showed excellent results, and intravascular ultrasound (IVUS; 30 MHz, Ultracross, Boston Scientific) showed a well-deployed stent (Figure, A). A 3.2 F optical coherence tomography (OCT) catheter, advanced to the same site, showed well-apposed stent struts (Figure, B). In addition, tissue prolapse between the stent struts (12 to 3 o’clock in B) was clearly visualized. The tissue prolapse occurred mainly in an area with lower OCT signal intensity (vessel wall visualized between the stent struts), which is suggestive of a plaque with decreased collagen content. A retrospective review of the IVUS study showed an area of possible tissue prolapse at the corresponding location (1 o’clock in A).

OCT is an optical analog of IVUS with a high resolution (10 μm versus 100 μm of IVUS). Recently, our laboratory developed a catheter-based intracoronary OCT system. The OCT image (Figure, B) was acquired during the first application of this technology in humans. This new imaging modality may be useful in improving the outcome of coronary intervention and may also help identify vulnerable coronary plaques.
Visualization of Tissue Prolapse Between Coronary Stent Struts by Optical Coherence Tomography: Comparison With Intravascular Ultrasound
Ik-Kyung Jang, Guillermo Tearney and Brett Bouma

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