

C-05 Discrepancy in Plaque Characterization Between Optical Coherence Tomography and Intravascular Ultrasound: Pathological Diagnosis of Intimal Thickening Using Directional Coronary Atherectomy

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A 46-year-old man presenting with exertional chest tightness underwent coronary angiography, which revealed 90% stenosis in the proximal left anterior descending coronary artery. Optical coherence tomography (OCT) demonstrated a poorly demarcated, low-signal region with marked signal attenuation, suggesting a lipid-rich plaque. However, no features of plaque instability, including plaque rupture, thrombus, or thin-cap fibroatheroma, were observed. After optimal medical therapy, elective percutaneous coronary intervention was performed. Intravascular ultrasound demonstrated predominantly fibrous plaque, indicating a discrepancy between OCT and intravascular ultrasound findings. The de novo lesion was treated using directional coronary atherectomy, followed by cutting-balloon angioplasty and drug-coated balloon angioplasty. Histopathological examination of the atherectomy specimens revealed a fibrous lesion predominantly composed of proliferating vascular smooth muscle cells, with focal foam-cell infiltration and lipid deposition. No necrotic core, calcification, or thrombus was identified, leading to a diagnosis of pathological intimal thickening. The low-signal, highly attenuating OCT appearance may have reflected the optical characteristics of foam-cell-rich pathological intimal thickening rather than a necrotic lipid core. This case demonstrates a potential pitfall in OCT-based plaque characterization and highlights the complementary roles of OCT, intravascular ultrasound, and histopathological assessment.