A 67-year-old man with a history of hypertension and dyslipidemia was admitted because of angina symptoms. Coronary angiography (CAG) showed an eccentric lesion of the distal unprotected left main coronary artery (ULMCA) involving the ostium of the left anterior descending coronary artery (LAD) (Fig. 1A). ULMCA/LAD crossover stent implantation was conducted with a 3.5 × 18-mm everolimus-eluting stent (EES) (XIENCE PRIME, Abbott Vascular, Santa Clara, California) at 12 atm, followed by the kissing-balloon technique (KBT). Despite a favorable CAG result (Fig. 2A), frequency-domain optical coherence tomography (FD-OCT) revealed stent strut deformation towards the LAD, leading to a large area of malapposition, mainly because of balloon inflation over an inadequate guidewire position (i.e., behind the stent struts) in the left
Information provided by FD-OCT ultimately oriented the guidewire removal and repositioning in the LCX, as well as additional intrastent post-dilation in the ULMCA–LAD with a non-compliant balloon (3.5 × 12 mm) at 22 atm. Marked reduction in stent strut malapposition and adequate stent expansion were demonstrated (Fig. 2).

In the present case, FD-OCT images depicted the poor results with the KBT after ULMCA percutaneous coronary intervention (PCI), results that were otherwise unrevealed by CAG, thereby demonstrating the potential role of FD-OCT to guide PCI in ULMCA distal bifurcation. Whether FD-OCT guidance can improve clinical outcomes in this scenario remains to be determined.

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