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A Case of Successful Debulking of a Eccentric Calcified LAD Lesion via Wire Bias Modification

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A 70-year-old man presented with exertional dyspnea. Coronary CT angiography revealed severe calcified stenoses in the left anterior descending artery (LAD) and left circumflex artery (LCx). Coronary angiography confirmed significant stenoses at LAD #6?7 and LCx #11. PCI for the LCx lesion was performed using orbital atherectomy (OAS), followed by cutting balloon (CB) predilation and drug-coated balloon (DCB) therapy.

Subsequently, PCI was attempted for the LAD lesion. Intravascular ultrasound (IVUS) revealed a diffusely eccentric calcified plaque located predominantly on the septal side. While wire bias in the proximal segment was toward the calcified plaque, the distal segment showed tenting of the wire toward a plaque-free site on the diagonal branch side. At this point, we considered that direct debulking of the distal segment posed a high risk of vessel injury. We hypothesized that performing proximal debulking might shift the wire toward the septal side. Only proximal OAS was performed using pull-back ablation.
Follow-up IVUS showed disappearance of distal tenting and favorable wire bias toward the calcified plaque. As a result, OAS was safely performed in the distal segment as well. Additional debulking of the residual proximal plaque was conducted with a 2.0 mm Rotablator. The entire lesion was then dilated with a CB; however, a localized dissection with hematoma occurred, and a drug-eluting stent (DES) was implanted.

This case illustrates that, in diffusely eccentric calcified LAD lesions, proximal debulking can be a strategic tool to modify wire bias and enable safe treatment of distal segments.