A Case of Lesion Modification by Debulking Were Useful in the PCI of Bifurcation Lesion With an Eccentric Calcified Lesion

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Background:Side branch (SB) occlusion remains a significant concern during percutaneous coronary intervention (PCI) in bifurcation lesions, particularly when heavy calcification is present opposite the SB ostium. Pre-procedural imaging can play a critical role in risk stratification and procedural planning.Case summary: A 70-year-old man with persistent atrial fibrillation underwent pre-procedural coronary computed tomography angiography (CTA) for catheter ablation, which revealed severe stenosis in the mid-left anterior descending artery (LAD). Subsequent coronary angiography confirmed 90% stenosis, and intravascular imaging with Intravascular Ultrasound(IVUS) and optical coherence tomography (OCT) identified a heavily calcified plaque on the vessel wall opposite the diagonal branch (D1), raising concern for potential carina shift and SB compromise during stent deployment. Given the eccentric calcification and guidewire bias, lesion preparation with orbital atherectomy was performed using both low- and high-speed sanding cycles. Post-atherectomy OCT demonstrated significant reduction in calcium volume. Pre-dilation with kissing balloon inflation (KBI) at the LAD-D1 bifurcation achieved sufficient expansion without indentation on the calcified vessel wall, indicating a low risk of carina shift. A drug-eluting stent was subsequently implanted in the LAD, followed by final KBI. Angiographic results demonstrated preserved flow in both the LAD and D1. No procedural complications were observed.Conclusion: This case illustrates that pre-stent lesion modification with orbital atherectomy, guided by intravascular imaging, can effectively mitigate the risk of SB occlusion in calcified bifurcation lesions.