

1132 **Tip-Detection Intraplaque Tracking Facilitated by Balloon Crack Formation for a Severely Calcified Left Anterior Descending Artery Bifurcation Lesion with a Near-Occlusive Diagonal Branch Ostial Lesion**

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A 63-year-old man developed exertional chest pain in June, year X. Echocardiography at a referring hospital demonstrated reduced left ventricular systolic function with an ejection fraction in the 30% range and hypokinesis extending from the anterior wall to the apex. He was referred to our institution in September, year X, for further evaluation and treatment. After optimization of medical therapy for heart failure, coronary angiography revealed a 99% stenosis in the mid left anterior descending artery (LAD, segment #7) and a 99% subtotal occlusion with delayed contrast filling in the diagonal branch (segment #9). The lesion was diagnosed as a Medina (1,1,1) bifurcation lesion.

Because the diagonal branch ostium was nearly occluded, the Tip-detection (TD) technique was considered the optimal strategy for side-branch protection. However, guidewire penetration was prevented by severe calcified stenosis just proximal to the bifurcation. After predilatation of the calcified LAD lesion with a scoring balloon, a crack was intentionally created within the calcified plaque. A Gaia Next 2 guidewire was then advanced into the crack using the TD technique, allowing intentional modification of the penetration angle and successful crossing into the diagonal branch.

Given the Medina (1,1,1) bifurcation anatomy with a near-occlusive diagonal branch ostial lesion, two-stent strategy was performed, achieving excellent stent expansion and an optimal final angiographic result.

Severe calcified stenosis just proximal to a bifurcation can represent a significant obstacle to side-branch wiring. In this case, intentional balloon crack formation enabled successful Tip-detection intraplaque tracking by modifying the guidewire course, thereby facilitating successful side-branch crossing and optimal bifurcation intervention. This technique may represent a useful option for the treatment of complex calcified bifurcation lesions with a near-occlusive side-branch ostial lesion.