

C-14 Orbital Atherectomy Facilitating Directional Coronary Atherectomy for a Superficially
Calcified Proximal LAD Lesion

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Objective: Directional coronary atherectomy (DCA) enables selective plaque removal under intravascular imaging guidance; however, superficial calcification may limit effective cutting. We report a case in which orbital atherectomy (OAS) facilitated repeat DCA for a superficially calcified proximal left anterior descending artery (LAD) lesion.

Methods: A 76-year-old man underwent staged percutaneous coronary intervention for 90% stenosis at the LAD ostium. Intravascular ultrasound (IVUS) demonstrated plaque with focal superficial calcification extending from the distal left main coronary artery to the proximal LAD. Initial DCA using an Atherocut L 6mm catheter was performed with 11 cuts at 2 atm under IVUS guidance; however, adequate plaque reduction could not be achieved. OAS using Diamondback 360 was then performed at low and high speed, followed by repeat DCA.

Results: After OAS, IVUS demonstrated reverberation within the calcified segment and plaque volume reduction, allowing more effective plaque excision by repeat DCA. The minimal lumen area increased from 2.8 to 4.9 mm², the minimal lumen diameter increased from 1.6 to 2.0 mm, and plaque area decreased from 71% to 52%. Treatment was completed using a 3.5x15mm drug-coated balloon, with a favorable final angiographic result.

Conclusion: OAS-mediated calcium modification enabled effective DCA in a lesion resistant to initial cutting because of superficial calcification. This "Orbit-to-Cut strategy" may represent a useful sequential debulking approach for selected calcified coronary lesions.