

1117 **PCAT: A Novel Low-Profile Distal Embolic Protection Technique for Jetstream Atherectomy in a Heavily Calcified Superficial Femoral Artery CTO**

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Background: Distal embolization remains a major concern during atherectomy for heavily calcified femoropopliteal lesions. Although techniques such as FCAT and RCAT have been introduced, they require large-bore sheaths and increase procedural invasiveness. We report the first clinical application of the Popliteal-Controlled Atherectomy Technique (PCAT), a novel low-profile distal protection strategy.

Case: A woman in her 80s was referred after failed endovascular treatment for a chronic total occlusion (CTO) of the right superficial femoral artery because of unsuccessful lesion crossing. EVT was performed via an ipsilateral antegrade approach. After crossing the lesion with a 0.018-inch CROSSLEAD Penetration guidewire, a microcatheter could not be advanced due to severe calcification. Lesion modification with a Wingman catheter enabled guidewire exchange to a 0.014-inch guidewire. Intravascular ultrasound demonstrated circumferential severe calcification, and Jetstream XC atherectomy was planned. For distal embolic protection, the popliteal artery was punctured and a 3-Fr Parent Plus catheter was inserted retrogradely. After establishing pull-through wire access, a balloon introduced through the 3-Fr sheath was inflated to temporarily interrupt antegrade flow. Atherectomy was successfully performed using a 2.4-mm Jetstream XC followed by Blade-Up 3.4-mm passes. After adequate debulking, balloon angioplasty and drug-coated balloon treatment achieved an excellent angiographic result without distal embolization.

Conclusion: PCAT provides effective distal embolic protection using only a 3-Fr retrograde system, offering a simple and minimally invasive alternative to conventional protection techniques. This novel approach may enhance the safety of Jetstream atherectomy for heavily calcified femoropopliteal CTO lesions.